

# THE IRON AGE

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## The Case of Electric Brass Melting

Production Experience at Detroit Plant of the Federal-Mogul Corporation—A Brief for the Electric Brass Furnace

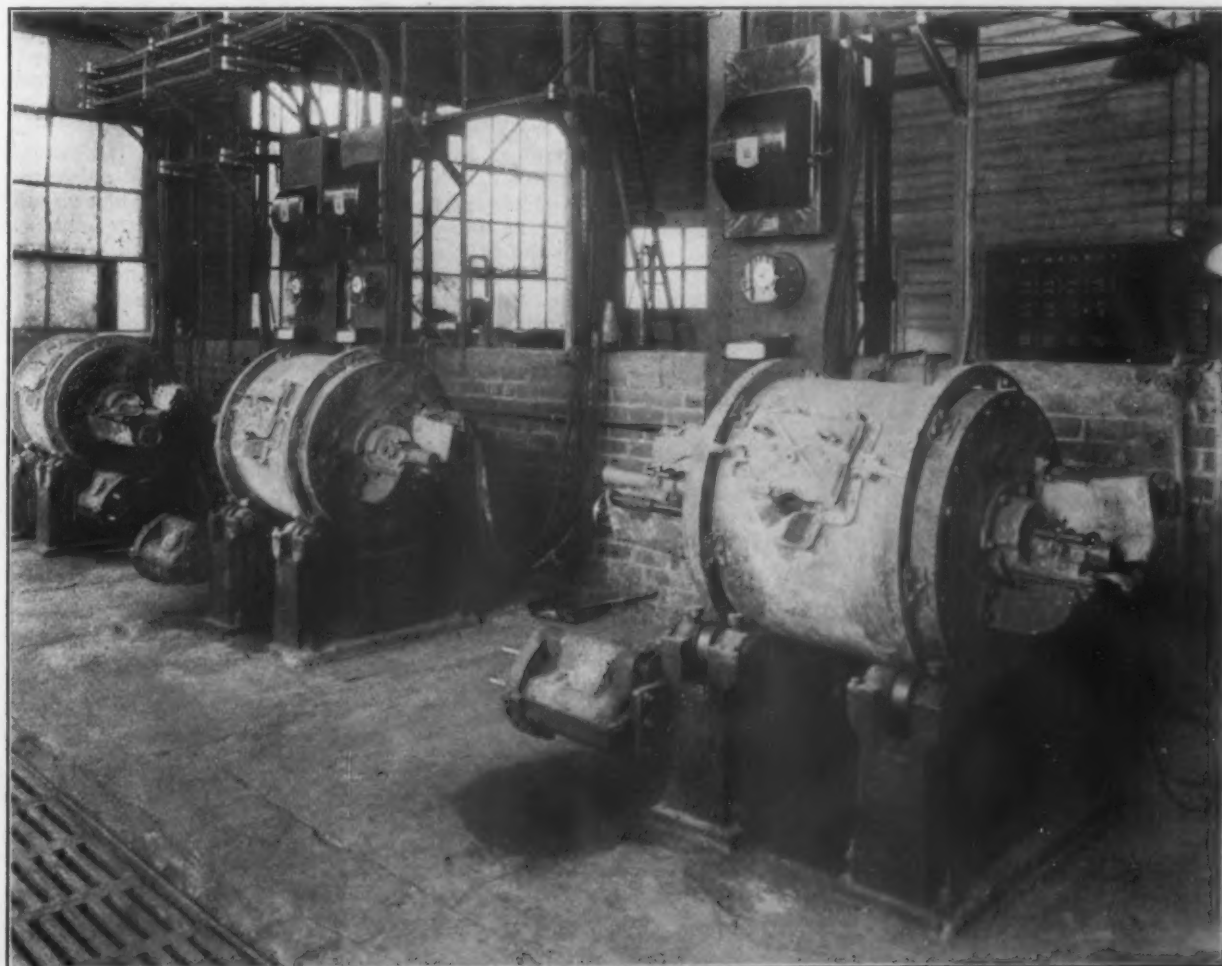
BY ROBERT JUNE\*

THE introduction of the electric furnace into the brass melting industry has changed the whole technique of one of the oldest industries known to mankind. From the wastefulness, uncertainty, danger and drudgery which once accompanied this process, today with the electric furnace we have economy, scientific accuracy and safety. There is nothing complicated or mysterious about the modern electric furnace. Its operation is as simple as that of a grinding wheel or tumbling barrel. It is a simple melting

machine—free from mechanical complications—and almost automatic in action.

The Federal-Mogul Corporation's installation at Detroit, which consists of five type LF 200-250-lb. capacity, Detroit electric furnaces, is a most striking example of the efficiency of the modern electric furnace. This company manufactures bearings and bushings of red brass and bronze for the automobile trade. Each furnace is supplied with current through a 100-kva. Kuhlman transformer, with square D switches and Sangamo input recording and indicating meters used on the panel boards.

\*Of the Robert June Engineering Management Corporation of Detroit.



Battery of Three Electric Furnaces at Plant of Federal-Mogul Corporation, Detroit

The operation of the furnace is as follows: With the kilowatt hour meter reading zero the current is turned on, the furnace remaining in a stationary position until the meter reading is 10 kwhr., when by means of a reversing gear arrangement it is started rocking back and forth. This rocking action, which assures perfect mixing, eliminates rejections due to segregation of the metals. The furnace is kept oscillating until the metal reaches pouring temperature—this temperature being determined by the heat input as indicated by the kilowatt-hour meter. The total elapsed time of run, including charging, melting and pouring, averages about 23 min. Repeated runs have been made with a net melting time of only 16 min. and a total time for charging, melting and pouring of only 21 min.

The weight of charges run is from 230 to 240 lb., common practice being 18 or 19 heats in an 8-hr. working day, although as high as 22 heats has been obtained. Coke fired furnaces on the same floor are capable of a maximum production of only five heats in an 8-hr. day. The quality of the metal from these furnaces while good is not as high as that from the electric furnaces, and the metallic losses are considerably greater.

The compositions used are given below—any one of which can be changed after each heat if desired:

Copper, per cent.....	80	85	85	88
Tin, per cent.....	10	5	5	10
Lead, per cent.....	10	5	9	0
Zinc, per cent.....	0	5	1	2

The metal obtained possesses high ductility and density and is uniform in texture and appearance—the apparent condition being that the rapid melting in a reducing atmosphere produces highest quality castings—the more rapid the melting the better the metal, a fact thoroughly established by repeated tests.

Life of the furnace linings at these high production rates is considerably longer than would be expected; 1200 to 1400 heats seem to be a minimum lining life, with 2000 heats as a possible average. The electrode consumption is 3.7 lb. per ton melted and the power consumption averages 325 kwhr. per ton of melt.

One of the biggest advantages this installation has produced is the elimination of the need of skilled melters. Anyone with the average normal intelligence can run one of these units and as a matter of fact, colored labor, intelligent but without previous experience, is used in the operation of these furnaces. Thus labor problems are no longer encountered, skilled melters being a thing of the past. Smoke and dust are eliminated and the handling and storage of fuel obviated as well as that of ashes from the fuel.

The experience of the Federal-Mogul Corporation with electric brass furnaces is being duplicated by other brass melters. Taking the electric furnace as a business proposition, we find that it possesses the following outstanding advantages:

1. The chemical and physical qualities of the alloy are under complete control at all times
2. They insure perfect castings, rejections being almost negligible, meaning 99 per cent of castings are accepted
3. Metallic losses are less than 1 per cent as compared with 3 to 8 per cent in oil and coke fired furnaces
4. No other type of furnace can approach the speed of production obtainable in this type of furnace
5. The elimination of skilled melters, labor problems and labor turnover
6. No handling of fuel and ashes, better working conditions due to absence of smoke and dust
7. Barometric and temperature conditions do not affect the quality of the product or the rate of its production
8. The life of the furnace lining is a maximum, as the surface is washed by metal twice a minute. Depending upon the size of the furnace the average lining performance is from 1,000,000 to 3,000,000 lb. of metal per lining
9. The alloy to be melted can be changed after each heat, if desired, without decreasing efficiency of furnace performance

The modern electric furnace is built heavy for hard service and durability. There are no complicated refractory shapes employed. It is dependable in operation. Its use cuts operating costs materially and solves labor problems. Through the use of the automatic

electrode regulators one man can readily handle several furnaces.

Maximum economy in heat is effected by the rocking motion of the electric furnace. With the heat applied in the center of the furnace there is uniform heat application to the entire charge; not only to the upper and lower layers, but to the bottom and the sides, as a result of contact with the refractories which have just been directly exposed to the heat of the arc. Since the metal is continually in motion, every particle is at some time directly subject to the heat of the electrode. This insures uniform temperature throughout the charge, while permitting of extremely rapid melting and superheating.

The highest lining temperature in the furnace need only be about 100 deg. above the pouring temperature, thus preserving the life of the refractory. The brass melter gets out of the electric furnace exactly what he puts into it. The rocking action eliminates rejections due to segregation of the metals. Even lead alloys of 30 per cent are found to be uniform within the range of average laboratory accuracy. Unusually close control of the various components of the alloys is possible, thus assuring castings which conform to given specifications, both physical and chemical, with minimum variations.

Free oxygen being absorbed by the arc, there is a neutral or slightly reducing atmosphere in the furnace. Yellow brass scrap or ingots can be melted with a net metallic loss of less than 1 per cent in the electric furnace. Red brass scrap can be melted with losses not exceeding  $\frac{1}{2}$  to  $\frac{3}{4}$  per cent. Even with yellow oily turnings the net metallic loss will be 3 per cent or under, depending upon the weight of foreign matter. The economies effected by the electric furnace will, in the average case, exceed \$10 a ton on the cost of melting.

### Oil Transformer with Nitrogen Cushion

A new kind of transformer which eliminates all danger from explosions in power houses has been developed by W. M. Dann and Dr. D. R. Kellogg, engineers of the Westinghouse Electric & Mfg. Co. The new type is known as the "inertaire transformer," and is unique in design in that it has a cushion of nitrogen instead of air in the space above the oil surface. The body of nitrogen is automatically created and maintained by the natural "breathing" of the transformer oil. The purpose of this feature is to secure the benefits that are derived from the contact of an inert and protective gas, having no oxygen content, with the oil.

Oxidation of the oil is prevented; moisture is excluded from the oil; risk of fire or explosion of inflammable gas above the oil surface is eliminated and a useful cushion of compressible gas above the oil surface is maintained which is found remarkably effective in case of a sudden increase of pressure, due to an internal breakdown of the transformer.

Oil expands and contracts according to temperature and this expanding and contracting causes what is known as "breathing." When the oil in a container expands it forces some air out and similarly when the oil contracts air is drawn into the container. The air as it is drawn into this transformer is made to pass through a quantity of deoxygenating and dehydrating chemicals. In the passage through these chemicals the oxygen content and whatever moisture is present in the air are absorbed and dry nitrogen is drawn into the gas space.

Contracts have been taken by the Bath Iron Works, Ltd., Bath, Me., for the construction of the largest units in pulp machinery for the Iroquois Pulp & Paper Co., Saratoga Springs, N. Y. Each unit weighs 95,000 lb. The company also is turning out massive caustic soda decanting apparatus for a North Tonawanda, N. Y., plant; a special type of boiler drums for the American Locomotive Co., Schenectady; 10,000 steel tanks for the Rockland & Rockport Co., Rockport, Me.; as well as various kinds of ship work.

Annealing Is Done in Pots and Tubes, Depending Upon Whether the Steel Is Coiled or in Straight Pieces. Furnace is car type, gas-fired and 8 ft. wide by 18 ft. deep; car forms hearth and height to roof is 8 ft.



## New Producer in Field of Cold-Finished Steels

Plant of Anchor Drawn Steel Co. Specializing  
in High-Speed Drill Rods and Require-  
ments of Machinery Builders

THE plant of the Anchor Drawn Steel Co., Pittsburgh, at Latrobe, Pa., ground for which was broken last February, was completed about a month ago and soon afterward placed in operation. This company, the latest entrant into the field of cold-finished steels, will confine its production to the higher grades of cold-drawn steel, specializing in high speed drill rods and the requirements of machine tool builders. Initial capacity is about 100 tons a month.

The company plans particularly to produce steel to exact size of any specification of tool manufacturers, and the management believes that it is in a comparatively unexploited field in offering a product in which the consumer is saved the expense of machining. Other uses for the steel of the sizes and analyses made at this plant include pipe-threading dies, small files, taps, medical and surgical instruments, small shafting and typewriter, adding machine and cash register parts. Sources of raw steel supply are numerous in the Pittsburgh district; its requirements run entirely to high-carbon and alloy steels and in Latrobe is a large maker of such steels.

The plant, which is located at the eastern end of Latrobe, on the main line of the Pennsylvania Railroad, a spur of which serves the plant, is on a seven-acre tract and, present buildings occupying only a small part of the land, there is ample space for such further additions as the business of the company may demand. Producing polished steel, the primary thought in the construction of the main building was the prevention of rust. The building therefore had to be weather-proof and one which could be easily heated when weather conditions were conducive to the formation of moisture. This was the reason for the separation of the cleaning department from the finishing department; so that fumes from the former cannot enter the latter.

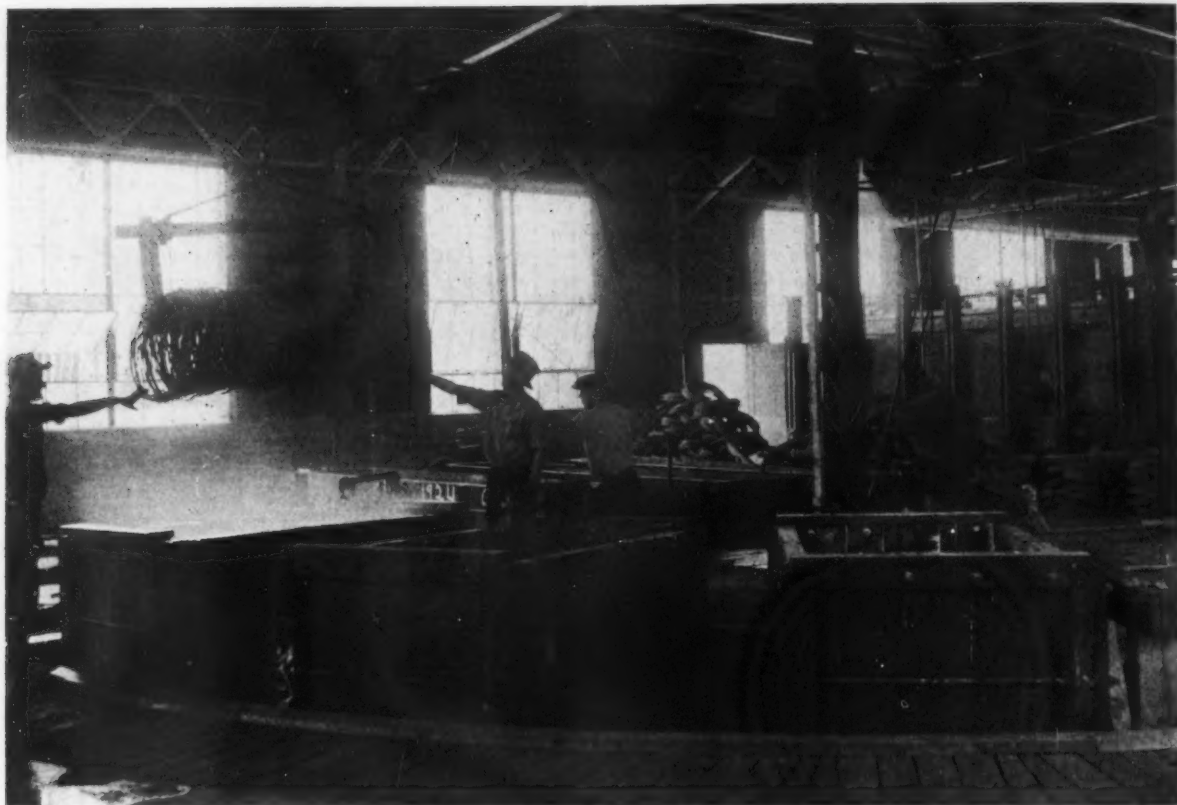
The main building is one story, with monitor type roof, of brick and steel construction, and is 80 ft. wide

and 230 ft. long. Steel sashes of unusual length along the side walls and in the monitor provide the lighting and ventilation that not only are necessary in a plant of this sort, but distinguish present day construction from that of former periods. This building houses beside the facilities for preparing the steel for market the company's office, a very complete metallurgical laboratory for the control of the product to the specifications of the consumer and a tool department in which are made the dies required by the company.

The cleaning department is housed in a building of 1½ stories, also of brick and steel construction, with monitor type roof and the same attention to light and ventilation that was given the main building. It joins the main building, but there is the separation created by the brick wall of the main building, and the passage between the two units is closed by a sliding door of heavy construction that is metal covered. This building, 60 ft. wide and 120 ft. long, contains the annealing furnaces, the lead annealing pots and the pickling department.

Steel received at the southerly side of the plant, along which runs the spur track of the Pennsylvania Railroad, is first inspected and weighed. It is then annealed and pickled, after which it is conveyed to the "baker," a large gas fired furnace, this treatment being given to relieve any brittleness set up in the steel by pickling and also to dry the steel and the lime coating. Pointing preparatory to drawing is done on a swaging machine. Steel of the smaller diameters is drawn over drums, while the larger bar stock goes to the draw bench. The final steps in the operation are the straightening, grinding and polishing of the steel, which then is slushed in heated oil as a rust preventive.

Equipment mainly is of standard type, but the annealing furnaces and the lead annealing pots are equipped with potentiometers. To make certain a perfect product and one that will measure as closely to specifications as is physically and mechanically pos-



In the Pickling Department, Vats Are Served by a Jib Crane. Vats in foreground are used for pickling coiled steel; those in the background for straight lengths.

sible, inspection of the steel is continuous throughout the entire process and metallurgical control is exercised through a laboratory containing modern devices for chemical and physical tests.

The Anchor Drawn Steel Co. was organized last October by Pittsburgh men, who have had long con-

nection with the steel industry. Dean R. Wilson is president of the company, and associated with him in its management are W. W. Noble as vice-president in charge of sales, G. W. Morrison as vice-president in charge of the operating division and Felix Kremp as metallurgist.

### Lack of Normal Vision in Automobile Plants

More than one-half of the workers employed in the manufacture of motor cars lack normal vision, according to an investigation by the Eye Sight Conservation Council of America.

Tests carried out by the Buick Motor Co., Flint, Mich., in cooperation with the council are said to show that 56 per cent of the company's new employees have defective eyesight, the eyes of all having been examined when application for employment was made. In a report of the council, just issued it is stated that: "The results of eyesight tests of the 3513 applicants for employment with the Buick company may be considered as a representative standard of measurement, not only for the entire automobile industry, but for the millions of persons engaged in other industrial pursuits in the United States. The persons examined in the Flint plant came from many different types of occupations seeking employment in the great variety of jobs to be had in a large plant manufacturing a highly complicated product."

"The proportion of defective visions found by the Buick company," the council's report declares, "closely approximates that generally found among any group of workers, when similar tests are made. This proportion is based upon the results of very simple tests. More careful examinations of other groups of employees of both industrial plants and commercial establishments show that fully 66 per cent have defective eyes."

The eyesight conservation work of the Buick company includes the prevention of eye accidents, the number of which has been greatly reduced since 1921, when the goggle campaign was started. Proper lighting is an essential factor of the Buick system of conservation,

95 per cent of the work in the plant being done under artificial illumination. Measurements are made in the various departments to determine whether the proper amount and distribution of light is provided.

### New Bureau of Standards Standard Samples

A new standard sample of high carbon ferrochrome which will be known as No. 64 and a renewal of No. 8c of Bessemer 0.1 per cent carbon steel are now ready for distribution with provisional certificates. Sample No. 64 contains chromium 67.95, iron 24.08, carbon 5.10, manganese 0.22, phosphorus 0.016, sulphur 0.07, silicon 2.05 per cent and small amounts of copper, nickel, vanadium, titanium and aluminum. Sample No. 8c contains carbon 0.084, manganese 0.433, phosphorus 0.105, sulphur 0.092, silicon 0.025 per cent, and small amounts of copper, nickel, chromium, vanadium, molybdenum and arsenic. The price of sample No. 64 is \$3 per 100 grams and of No. 8c \$2 per 150 grams, prepaid or parcel post, c. o. d.

### The Griffin Process in Europe

P. H. Griffin, of the Griffin Chilled Steel & Iron Co., 27 William Street, New York, is now abroad in connection with the restarting of operations in England and France in the production of "chilled steel" and "special charcoal iron" by methods which he has developed. Previous to the war several plants in Europe manufactured chilled car wheels of special metal under the Griffin process and there was a considerable use on French State Railways of wheels manufactured at the French Griffin works at Gorcy. In the production of "chilled steel," it is stated that scrap is employed and the operation is carried on in a modified cupola furnace.

## MANGANESE IN 1923

### Domestic Ore Output Small—Importations Less Than in 1922

More manganese ore was shipped from mines in the United States in 1923 than in 1922, according to the final figures given out by the U. S. Geological Survey. Although the shipments increased more than two and one-third times, or from 13,404 gross tons in 1922 to 31,500 gross tons in 1923, they were smaller than was expected under the tariff on manganese ore which went into effect Sept. 22, 1922.

The imports in 1923 were the smallest since 1911 and were less than half those in 1918 when the domestic production was nearly 10 times as great as in 1923. Consequently domestic production, plus imports in 1923, was 238,000 tons, or less than one-third of the production plus imports in 1918, or 797,000 tons. These figures, however, do not indicate a decrease in the requirements for manganese in 1923. Most of the manganese ore consumed in the United States is employed in making ferromanganese and spiegeleisen and the steel pro-

duced in 1923, except the production in 1917, was the highest ever recorded. Large stocks of manganese ore were accumulated in the United States prior to Sept. 22, 1922, when the tariff went into effect and the large imports of ferromanganese in 1922 and 1923 made possible the heavy production of steel with so low a total domestic production plus imports, of manganese ore in 1923.

Montana produced the largest quantities of high-grade manganese ore, or 21,916 tons, which is more than twice the production of all the other States put together. Arkansas came second with 3768 tons, and Colorado and Georgia shipped 3870 tons in 1923 after having been completely unproductive in 1922.

Total imports for 1923 are returned as 206,048 tons as compared with 374,451 tons in 1922. Last year Brazil was credited with the largest amount, or 88,036, with West Africa second at 27,965 tons and India third at 25,568 tons. Russia sent last year 11,670 tons and Cuba 9062 tons, with other countries such as Argentina, Chile, Panama and a few others contributing less than 1000 tons each. Turkey in Asia and Turkey in Europe which mined what used to be Russian ore are credited with 41,144 tons.

## ADVOCATES STORING COAL

### Ordering Equal Monthly Amounts Will Lower Prices—Present Coal Buying Practices Criticized

That savings, estimated at hundreds of millions of dollars annually, would result from a definite storage policy, is a point stressed in the report of the coal storage committee of the American Engineering Council. The "spot purchaser" as a factor inciting to buying hysteria is also discussed in the report and the ordeal of the public during a complete coal year, which by custom begins April 1, is described.

"In March," it is said, "the producer becomes accommodating and quite anxious to ship every ton the purchaser will accept. At the same time he portrays vividly the advantages of immediately signing up a contract for the next year's business.

"The purchaser has become reluctant to purchase, and the negotiations frequently advance well into April before a contract is closed. Generally this contract is flexible and limits shipments to small amounts for the first few months, increasing as winter approaches. Frequently he refuses to purchase by contract, voluntarily electing to purchase his fuel on the open market.

"Mines and railroads work at less than average demand until August. In October the demand is above the average by some four or five million tons, railroads are working nearer capacity and deliveries begin to slow up a little. The contract customer or purchaser becomes uneasy and asks rapid delivery.

#### Purchaser of Spot Coal Plays the Market

"Another element now enters into the situation, i.e., the customer who buys "spot" coal on the open market. This type of purchaser "plays the market" and his delight is to find "distress" coal and acquire it at a price ruinous to the producer.

"The increasing demands of the contract customer restrict the supply of "free" coal; the producer accordingly becomes less willing to sell at sacrifice prices; the prices advance; the spot purchaser begins to worry about his supply, raises his bid; other spot buyers do the same and any little untoward movement starts all of them in an hysterical orgy of buying.

"Orders are pyramided; producers order railroad cars on the basis of these orders to a number greatly in excess of railroad capacity or actual consumption; cars are allotted on a percentage basis and we have all the symptoms of an apparent coal shortage though meanwhile production is greatly in excess of consumption.

"Prices have advanced to such a point as to make

profitable operations which cannot produce coal commercially under normal conditions. Many small high-cost mines begin operating, some haul coal many miles by wagon to the railroad whose energies are now greatly dissipated through being compelled to give these small shippers car and locomotive service, thus prolonging the apparent shortage and making it more nearly an actual shortage in fact.

"New mines are opened to take advantage of the price flurry; competition becomes keen for labor; the small operator overbids the established operator in the matter of wages, which he can readily do for the old operator is selling his coal under contract prices predicated on then existing wage scales.

"Irresponsible brokers flock to the scene and there is no apparent limit to prices paid until the purchaser discovers that all through this period their stocks of coal have gradually been increasing. Prices drop as quickly as they advanced; there is a great scurrying for cover among the brokers and the industry goes through the throes of readjustment to conditions.

#### Too Many Mines Developed

"Too many new mines have been developed—hence, over-development. Men have been attracted to the industry by the wages and so we have too many miners. After the price flurry and excess demand, enough of the new mines remain to absorb much of the market before enjoyed by a smaller number of mines so there is a smaller market for the product of each mine, which in turn means a fewer number of days' operation and less opportunity to earn.

"This again is reflected in demands for higher wage rates. The vicious circle is not complete until the higher wage rates have in turn increased the cost per ton of coal, all these results being attributable to the desire of the purchaser to buy coal in any quantities he sees fit, when he wants it, instead of spreading his purchases in equal monthly amounts over the year.

"Were the coal purchaser, who buys in carload lots, to order equal monthly amounts of coal throughout the year there would be no price flurries—except in event of strikes. Production would soon be on a truly competitive basis and prices would reach a lower level. Inefficient high cost operations would automatically remove themselves."

The first National Motor Transportation Show in the history of the industry will be held in Chicago, Oct. 21 to 27, at the American Exposition Palace on Lake Shore Drive, a building recently completed at a cost of \$10,000,000. The show is to be held under the auspices of the Motor Truck Industries, Inc., an association of truck manufacturers of the country, with headquarters in the Capitol Building, 120 Madison Avenue, Detroit.

## JULY STEEL OUTPUT

Yearly Rate Down to About 22,400,000 Tons—  
Daily Rate Off About 12.5 Per Cent

Still another sharp decline in the steel ingot output took place in July. The daily rate last month was 71,901 tons as compared with 82,259 tons in June—a decrease of 10,358 tons or about 12.5 per cent. The contraction in June was 15,084 tons per day, the decline in May was 30,870 tons per day, while in April when the recession started the decrease was 32,862 tons per day. The July rate is the smallest since December, 1921, when the daily rate was 62,707 tons.

The statistics of the American Iron and Steel Institute show that the July output of the companies which made 94.84 per cent of the country's total in 1923 was 1,772,954 tons. Thus, assuming that the 5.16 per cent not reporting produced at the same rate, a total July output is indicated of 1,869,416 tons. The equivalent annual rate is about 22,400,000 tons, or about 41.5 per cent of capacity.

The table gives the production by months of the different kinds of steel, together with the estimated daily rate for all companies. The total calculated production for monthly and daily outputs has been revised in the light of the final figures for 1923.

Monthly Production of Steel Ingots, Reported by Companies  
Which Made 94.84 Per Cent of the Steel Ingots in 1923  
(Gross Tons)

Months, 1924	Open-hearth	Bessemer	All other	Calculated production monthly	Approx. daily production all companies
January .....	2,766,534	667,032	12,577	3,633,639	134,579
February .....	2,902,641	695,905	14,085	3,809,185	152,367
March .....	3,249,783	706,801	15,260	4,187,942	161,075
April .....	2,575,788	573,381	12,356	3,333,535	128,213
May .....	2,060,896	425,099	6,648	2,628,261	97,343
June .....	1,837,660	310,070	2,622	2,056,466	82,259
July .....	1,525,912	241,880	5,162	1,869,416	71,901
7 Months... 1923	16,719,214	3,620,168	68,710	21,518,444	118,233
January .....	2,906,892	728,270	9,467	3,841,095	142,263
February .....	2,613,564	669,903	10,797	3,471,843	144,660
March .....	3,046,309	799,525	12,841	4,066,680	150,618
April .....	2,974,579	772,485	13,933	3,963,736	158,549
May .....	3,136,558	847,418	16,719	4,216,355	156,161
June .....	2,821,239	737,845	15,483	3,767,256	144,894
July .....	2,658,449	680,884	11,496	3,531,458	141,258
7 Months... 1924	20,157,590	5,236,330	90,736	26,858,423	148,389
August .....	2,796,370	701,059	9,326	3,695,788	136,881
September .....	2,562,771	613,709	8,602	3,356,776	134,271
October .....	2,735,513	649,452	9,163	3,577,091	132,485
November .....	2,348,361	616,335	9,309	3,134,321	120,551
December .....	2,135,898	570,004	10,912	2,863,266	114,531
*Total .....	32,736,503	8,386,889	138,048	43,485,665	139,825

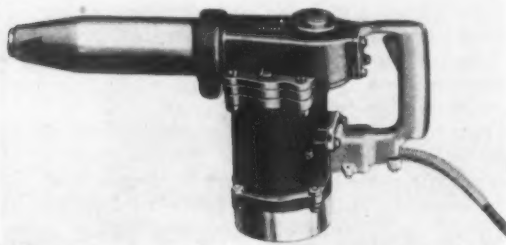
The decline in the July daily rate of about 12.5 per cent compares with one of about 14.75 per cent in the pig iron production for July.

### Electric Hammer Drill Equipped with Universal Motor

An electric hammer drill known as the Little Giant and intended for use in the light chipping of metals and the drilling of concrete and soft stone, has been placed on the market by the Chicago Pneumatic Tool Co., 6 East Forty-fourth Street, New York. The tool is equipped with a universal motor, operating interchangeably on direct or alternating current. It is merely necessary to have the motor wound for the correct line voltage on which it is intended to operate.

The hammer blow delivered on the drill steel or chisel is the result of energy stored up by a rapidly moving piston which is mechanically free from the impelling force. The connection between the piston and the driving mechanism is by means of air which, when the blow is delivered, restores energy to the piston through the expansion of the air which formed a cushion at the end of the up stroke. It is emphasized that there is no tendency for the electric wires or connections to be crystallized because of incessant jarring.

The tool is well balanced and when held loosely in



Hammer Drill for Light Chipping of Metals and Drilling of Concrete. The length is 17½ in. and the weight 21 lb.

the hand the center of gravity lies within the barrel of the tool and the operator's hand, causing the tool to hang vertically. A trigger switch is located in the handle for the control of the electric current, release of the switch opening the circuit. The switch is located inside of the handle, as shown, so that the motor cannot be started accidentally by a blow from the outside. A terminal block for the cable permits of cable replacements without disturbing other connections, and adjustable brush rigging permits of shifting brushes. A sheet steel fan provides adequate ventilation of the motor. The bearings are of the ball type, and provision has been made for the lubrication of all revolving and

reciprocating parts. Gears and other moving parts subject to wear are hardened.

The capacity in soft stone or concrete is 1 in. and the number of blows per minute 1450. The length is 17½ in. and the weight 21 lb. net. The energy consumed in watts is 310. The equipment includes 10 ft. of cable with fused Edison connector, two drill steels with holders and rotary wrench, or two flat chisels.

### To Discuss Measurement of Personnel Activities

A conference to discuss measurement of personnel activities will be held at Swampscott, Mass., Sept. 19 and 20. The program will include papers on "The Cost of Personnel Activities," prepared under the auspices of the Associated Industries of Massachusetts, and "Methods of Measuring the Effectiveness of Specific Personnel Activities," by Dr. W. W. Charters of the University of Pittsburgh. This study is a part of the American Management Association Research Program and covers methods used in industry, banks, insurance companies, department stores and other business organizations.

### Portland Cement in July

Production of Portland cement is reported by the United States Geological Survey to have been 14,029,000 bbl. in July, the largest total for any month in our history. This displaces the high record of 13,777,000 bbl. made in May. For the seven months to date, 1924 production aggregates 80,816,000 bbl., against 75,351,000 bbl. last year, and constitutes a new high record.

Shipments in July also made a new record, at 16,614,000 bbl., displacing the previous record made in June, 15,036,000 bbl., and indicating the great activity continuing in building construction. Shipments for the seven months aggregated 79,110,000 bbl., another record, comparing with 76,274,000 bbl. last year. Stocks at end of July were 12,318,000 bbl., compared with 14,903,000 on June 30, and the lowest since Dec. 31, 1923.

An open competitive examination for junior metallurgist will be held throughout the country on Sept. 3 to fill vacancies in the Bureau of Mines, Department of the Interior, for duty at Salt Lake City, Utah, and Tucson, Ariz. Information and application blanks may be obtained from the United States Civil Service Commission, Washington.

## ELECTRIC FURNACE ANNEALING

Analysis of Costs for "Fuel" and Labor—Improved Quality of Product and Better Working Conditions

BY A. I. NUTTING\*

IN 1922 we installed a small electric furnace for heat treating dies. This proved to be so satisfactory that we soon began to consider the purchase of an electric furnace for annealing, or relieving the strains in brass and steel shells, between drawing operations.

At this time our method was to anneal in a gas furnace. A man had to stand over this furnace constantly to keep the temperature from getting too hot and burning our work, or from getting too cold and resulting in a poor anneal, with a subsequent loss of a large number of pieces in the next drawing operation. In spite of this constant attention our work was badly pitted, scaled and unevenly heated. On parts that had



Handling Small Boxes of Brass Parts into Electric Annealing Furnace

to be nickel plated this pitting increased the cost of plating. Due to uneven temperatures in the furnace chamber itself, it was necessary to withdraw the annealing pans and change ends to get by with our work, and also on account of this uneven temperature only a small charge could be loaded at one time.

Moreover, our gas furnace was an expensive piece of shop equipment from an operating standpoint. City gas cost us \$1.30 per 1000 cu. ft. and, due to need of frequent relining, the upkeep was high. Electricity would cost us 3c. per kwhr. It was not the idea of reducing our operating cost that led us to consider the electric furnace, but that we expected to improve our product. We did, however, reduce our production costs as well.

### Electricity vs. Oil or Gas

We investigated gas and oil fuel furnaces as well as electric furnaces, with the idea of installing the best furnace that had been developed. Comparing the three types of furnaces on a price basis, with all necessary auxiliaries, such as motor-driven blowers, etc., and with automatic temperature control equipment, the electric furnace was slightly higher in price. To offset this, it seemed to us to offer many advantages not possible to obtain in a gas or oil-fired furnace. The things that

especially appealed to us were the great improvement in working conditions, due to the absence of a constant flow of hot gases into our shop, and the reliability of the temperature control. It seemed to us that temperature control on the electric furnace had reached perfection.

Late in 1923 we ordered an electric furnace made by the General Electric Co. This was put in operation early in January this year.

This furnace is 18 in. wide, 36 in. deep and the door opening is 18 in. wide and 15 in. high. The heating coils are of a heavy ribbon and are supported on the side of the walls on special insulators built into the fire brick lining. We were astonished at the low temperature of the outside of this furnace. After operating all day the walls are just a little above room temperature. After operating the day before at 1100 deg. Fahr. the temperature is about 700 deg. the next morning. Also after being shut down Friday night, on Monday morning it is so hot in the chamber that one cannot hold a piece of steel that has been left in the furnace. This heat retention is due to the insulation used, which means high operating efficiency.

We make a large number of small brass, steel and aluminum punchings that are used by manufacturers of automobile tail lights. As most of this metal is light gage stock and several drawing operations are necessary, the strains must be thoroughly relieved. In our electric furnace we are using pans 10 in. wide, 12 in. long and 5 in. deep, made of 1/16 in. sheet steel. We are using only 37 per cent of our hearth areas, but we have larger pans on order that will permit us to load this furnace to full capacity. We wished to use up these old pans we had on hand, but find we are not burning them up as we did in the gas furnace, so they will be thrown into the scrap pile. Our 5 in. deep pans are filled full and stacked two high, making a total of four pans for a charge. The length of time allowed for heat penetration varies of course with the gage of the metal used and the temperature. The average is around 35 min.

### Specific Instance of Cost Comparison

On a job of annealing 13,500 pieces it required 5 min. to load and unload each charge and three charges were necessary. We charge one hour's time of one man at 50c. an hr. on this job. On the gas furnace it would have required a day and a half, or 14 hr., with a man continually on the job. This labor cost of \$7 indicates a saving of \$6.50 or 93 per cent in labor cost in favor of the electric furnace. For gas over the 14-hr. period, we would have paid \$7. Our cost for electricity for this job was \$3.15, as we used 105 kwhr., including the 37.5 kwhr. required to bring the furnace up to temperature from below 300 deg. Fahr. This is a 55 per cent saving in cost of fuel. Combining the above savings, we have a total saving of \$10.35 or 74 per cent.

This job we have analyzed is representative of the results we are getting continually. A check on our gas and electric bills shows an average of \$38 per month for gas before using the electric furnace. Gas is eliminated now in our shop. Our electric bill for this furnace averages \$17 per month, a saving of \$21 per month or 55 per cent—a remarkably close check on the above operation.

Our annealing is more uniform, which results in less rejections; pitting is done away with and this means a lower cost of nickel plating. We have not spent a cent on upkeep in six months and can see no likelihood of having to spend any money for a long time. We can do the same amount of work in one-quarter the time formerly required. We have used our furnace from 350 deg. Fahr. for drawing aluminum to 1500 deg. for heat treating dies, and the results obtained have greatly exceeded the results we expected when we purchased our electric furnace.

The Plainville Casting Co., Plainville, Conn., is about to close negotiations for the purchase of the Bay State Casting Co., Catherine Street, Westfield, Mass., plant for a branch foundry. The new owners will employ approximately 50 hands. John C. Haswell, Dayton, Ohio, is the owner of the Westfield foundry.

\*General manager Nutting Mfg. Co., Worcester, Mass.

## Industrial Problems Discussed at Estes Park Conference

DENVER, Aug. 7.—The growing spirit of cooperation between the various elements of industry was stressed at the Industrial Conference and School for Executives at Estes Park, Colo., July 18-26.

Harry N. Clarke of Cleveland with his splendid doctrine of right as opposed to individual rights set the goal for the conference.

J. A. Hiller of Chicago, through "Manpower in Industry" discussed the various elements that enter into the industrial problem and the machinery which has been set up by various concerns and organizations to arrive more nearly at Mr. Clarke's goal.

Ex-Governor Henry J. Allen of Kansas discussed the Kansas Industrial Court and other legislative moves toward the establishment of industrial right.

Hal S. Ray, director of personnel and public relations, Chicago, Rock Island & Pacific Railway, showed how excellently the plans laid down by Mr. Hiller would work out in actual practice if the principals of a concern were sincere.

Judson G. Rosebush of Appleton, Wis., through a masterful series of lectures on "The Ethics of Profit Taking in Industry," satisfied everyone that leaders in our present capitalistic system were in most instances looking on profit as a measure of success rather than as an end in themselves. His course of reasoning seems to bear great hope that the goal of human rights may and will be reached under our present economic plan.

These meetings were attended by over 500 men and women from 28 States representing 44 industries.

## Implement Maker to Sell Castings

The Emerson-Brantingham Co., with general offices at Rockford, Ill., recently reopened its No. 4 gray iron foundry for custom work. For three years past it has been engaged in making malleable castings for the trade, and is now in production on gray iron castings in any weight up to 10,000 lb., having refitted the No. 4 foundry for this work. This foundry has a daily capacity of 50 tons. For its own implement work the company has a separate gray iron foundry. Both malleable and gray iron foundries are located at Rockford, which puts the company in a position to supply from one source customers who require both gray iron and malleable castings.

## Building Construction in July

Reports of F. W. Dodge Corporation show building contracts awarded in July in the 36 Eastern States amounting to \$347,184,300. A change in the character of the building program is noted in a return of residential construction to a more nearly normal figure. It was 37 per cent of the total in July, as against 48 per cent of the total for the first six months of the year. Commercial and industrial work remains at about the same per cent as for some months, the July ratios being 14 per cent of the total for commercial buildings and 6 per cent for industrial buildings. The figures were respectively \$49,345,700 for commercial buildings and \$19,664,200 for industrial buildings.

Total construction started in the 36 Eastern States in the first seven months amounted to \$2,668,818,700, or 9 per cent more than in the first seven months of 1923. Substantial increases have been shown in New York, Northern New Jersey and the Southeastern States, moderate increases in New England and the Middle Atlantic States, while the Pittsburgh district and Central and Northwestern States have declined considerably.

In the manufacture of fire arms in 1923, 6196 wage earners were engaged, 31.1 per cent more than in 1921; they were paid \$7,585,000, or 32.4 per cent more than in 1921; and they produced rifles, shot guns, revolvers, etc., valued at \$17,527,000, or 36 per cent more than in 1921, according to the Census Bureau.

## A New Process for Making Chromium Alloy Steels

In the production by the basic open-hearth process of alloy steels containing chromium there is frequently considerable loss of chromium, when it is added as the ferroalloy, due to the oxidation of the chromium and its incorporation in the slag. This loss varies according to the condition of the individual heats of metal.

A process has recently been developed and patented, which it is claimed reduces these losses considerably and thus lessens the cost of production. Napoleon Petinot, of the United States Ferroalloy Corporation, New York, under date of July 15 was granted a patent (U. S. No. 1,501,183) on a "new method for making chrome steel and chrome iron." The inventor is well known in the metallurgical field in Europe and this country and has been connected with the development of the Heroult electric furnace and with various ferroalloy plants. The process, which deals mostly with the making of chrome steel in the open-hearth furnace, employs a ferrochromium having a silicon content of 2 to 10 per cent. The inventor claims that the silicon gives a decided protection to the chromium from oxidation during its diffusion through the steel bath, resulting in an increase in the amount of chromium recovered. Another advantage referred to is that it is easier to meet the specifications, which are in many cases difficult, in that the carbon limits in plain chromium steel range from 0.28 to 0.32 per cent, with the chromium from 1 to 1.10 per cent.

Since the method was first proposed, a year or two ago, it has had commercial application in the production of many thousands of tons of chrome alloy steels. The alloy is known commercially as a chrome-silicon alloy.

## Steel Corporation's Orders Decrease

Unfilled business on the books of the United States Steel Corporation as of July 31 last, aggregated 3,187,072 tons, or 75,433 tons less than at the close of business June 30. This decrease in tonnage is the smallest one reported so far this year. In June unfilled business decreased 365,584 tons, in May decreased 830,358 tons, in April decreased 574,360 tons, in March decreased 130,094 tons, but in February increased 114,472 tons, and in January increased 353,090 tons. A year ago the unfilled business amounted to 5,910,763 tons, or 2,723,691 tons more than today.

Following is the unfilled tonnage as reported by months since January, 1922:

	1924	1923	1922
Jan. 31.....	4,798,429	6,910,776	4,241,678
Feb. 29.....	4,912,901	7,283,989	4,141,069
March 31.....	4,782,807	7,403,332	4,494,148
April 30.....	4,208,447	7,288,509	5,096,913
May 31.....	3,628,089	6,981,351	5,254,228
June 30.....	3,262,505	6,386,261	5,635,531
July 31.....	3,187,072	5,910,763	5,776,161
Aug. 31.....	.....	5,414,663	5,950,105
Sept. 30.....	.....	5,035,750	6,691,607
Oct. 31.....	.....	4,672,825	6,902,287
Nov. 30.....	.....	4,368,584	6,840,242
Dec. 31.....	.....	4,445,339	6,745,703

## Scope of Wage Agreements Among Sheet Mills

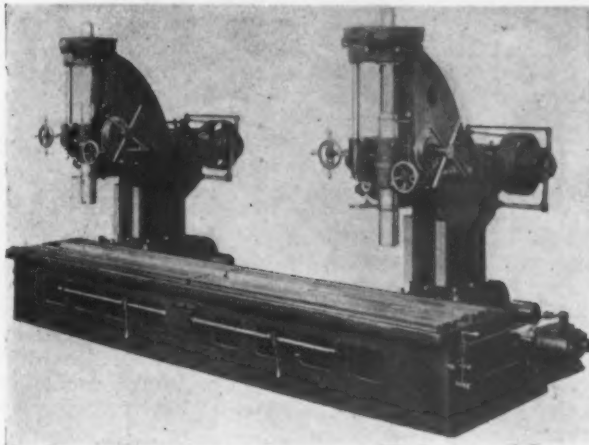
Slightly in excess of 23 per cent of the sheet mills of the United States are operated under an agreement with the Amalgamated Association of Iron, Steel & Tin Workers. The total number of mills is 500, of which 169 are embraced by the companies signing the wage scale agreement of the Amalgamated Association. These mills have a rated capacity of 1,159,000 net tons annually, which is about 23½ per cent of the total capacity, now placed at 5,000,000 net tons a year. Hot tin mills operated as union units number 78 out of a total of 563, or slightly more than 14 per cent.

The use of heavy grades of fuel oil in burners of sufficiently small units to serve for residence heating is likely to be subject of research by the Bureau of Mines, following a conference of representatives of the bureau, producers and refiners of oil and manufacturers of oil burners at Tulsa, Okla., July 28. It is expected that the producers and refiners will vote an appropriation.

### Boring Machine for Locomotive Side Rods and Other Work

A locomotive rod boring machine designed for use on side rods and also on a variety of other work where two holes are to be bored, drilled, faced, reamed, or tapped simultaneously, or where one operation may be performed by the first spindle and another operation by the second spindle, is shown in the accompanying illustration. Wide range, quick adjustment of the heads and the large number of speeds and feeds available are features emphasized by the makers of the machine, the Colburn Works of the Consolidated Machine Tool Corporation of America, Wilmington, Del.

Each spindle is operated independently. A tapping attachment may be applied to either head, and for ex-



Locomotive Side Rod Boring Machine. Each spindle is operated independently, being equipped with individual motor drive. These motors travel with the head and furnish power for moving the head longitudinally

tremely heavy boring and tapping, a tapping hood is recommended. Each spindle is equipped with independent motor drive which travels with the head, these motors also furnishing the power for moving the head longitudinally. Driving and feed gears run in oil and driving shafts and spindles are mounted in ball bearings. Two levers at the front of the bed provide for close adjustment of the columns and the columns are traversed by manipulating levers at the ends, which operate through a double friction clutch. An adjustable steady support for the lower end of the spindle and a cutting compound pump are part of regular equipment.

The spindle drive, feed mechanism, etc., is the same as used on the company's standard D-8 machine. The drilling capacity is 5 in. in solid steel and the boring capacity is 15 in. The swing of the machine is 36 in., the maximum distance from spindle nose to table is 30 in. and the vertical travel of the spindles is 18 in. The working surface of the table is 28 x 173 in. The taper in the spindles is No. 6 Morse. There are eight speeds and six feeds for each spindle. The motors recommended are of 15 hp. 1200 r.p.m. The weight of the machine is 35,000 lb.

### To Determine Strength of Gear Teeth

A contract for the building of a special machine for use in an extended series of tests to determine the strength of gear teeth has been awarded to the Bilgram Machine Works, Philadelphia. The tests will be conducted under the general supervision of the special research committee on gears of the American Society of Mechanical Engineers at the Massachusetts Institute of Technology.

The committee, which is headed by Wilfred Lewis, designer of the machine, as chairman, and C. H. Logue as secretary, has undertaken to secure the necessary funds and to supply the test gears. Dr. S. W. Stratton, president Massachusetts Institute of Technology, has agreed to provide the necessary observers for the tests who will work under the direction of Prof. E. F. Miller, head of the department of mechanical engineering. The

contract calls for the completion of the machine within five months.

The full personnel of this special committee is as follows: W. Lewis, Earle Buckingham, R. E. Flanders, Prof. A. M. Greene, Jr., C. H. Logue, F. E. McMullen, Prof. E. W. Miller and E. Wildhaber. The chairman of the sub-committee in charge of the solicitation of funds is E. W. Miller, engineer, Fellows Gear Shaper Co., Springfield, Vt. Through his efforts and those of the other members of the committee, something over half the money necessary to cover the cost of the machine is now available in cash. A large part of this fund was contributed by firms which are members of the American Gear Manufacturers' Association and it should be stated that this association itself has endeavored in every possible way to assist the committee.

### Finishing Temperature and Total Reduction in Rolling Plates

WASHINGTON, Aug. 11.—The finishing temperature and total reduction are the most important factors affecting the properties of rolled plate made from mild carbon steel. Initial temperature of rolling, pass reduction and roll speed have no appreciable influence, according to results obtained by the Bureau of Standards, in the completely equipped experimental plant of its metallurgical division. It has also been shown that when steel is rolled in one direction only, which is often done as a matter of convenience in obtaining the desired shape, the mechanical properties in the direction at right angles to that of rolling are inferior to those in the direction of rolling.

Since the greater part of all steel manufactured is subjected to mechanical work by hot rolling, forging or drawing, the importance of this investigation is obvious. This working of metal serves a two-fold purpose: In the first place it gives the metal the desired form, such as bars, plates, structural shapes, rails, etc., and in the second place it breaks up the coarse, weak, crystalline structure of the cast ingot, replacing it with a finer grained structure which greatly improves the mechanical properties of the steel.

### Copper Clad Ferronickel as a Substitute for Platinum

The composite alloy wire, a substitute for platinum, invented by Dr. Colin G. Fink, Columbia University, New York, has been used for some time as a leading-in conductor hermetically sealed into the glass of all types of "evacuated containers" such as incandescent lamps, mercury arc rectifiers, audions, etc. The wire consists of an outer sheath of copper and a core of ferronickel of about 44 to 46 per cent nickel. The thermal coefficient of expansion of the core varies with the nickel content. The 44 to 46 per cent nickel alloy has a coefficient decidedly lower than ordinary glass, whereas the coefficient of copper is almost double that of glass. Accordingly, the thickness of the copper shell and the diameter of the ferronickel core of Fink's composite wire are so proportioned as to produce a finished product that has a coefficient of expansion substantially the same as that of glass. Before using the composite wire thus obtained for making seals in glass it may be found desirable to apply to it a coating of a borate. Borax is suitable for this purpose, though zinc borate and other borates also may be used. Zinc borate is non-hygroscopic. The coating protects the wire during sealing-in operations and also facilitates the solution or absorption of the oxide film by the glass. The patent has just been issued by the United States Patent Office.

The Concrete Dope Book, so-called, published by W. H. Stewart, Station A, Waterloo, Iowa, at 25 cents a copy and containing a number of useful tables as to the amounts of materials for different uses of concrete and costs of concrete blocks, concrete pavements and the like, has entered its fourth edition. The book shows a few pictures of concrete mixers made by the Stewart Mfg. Co. at Waterloo, Iowa.

## NEW HAVEN MACHINE EXHIBIT

### Technical Program on Metal Cutting Problems Also a Feature of Yale University Meeting

Executives, production managers, engineers, and machine operators are invited to the New Haven machine tool exhibit, to be held on Sept. 15 to 18 inclusive, under the auspices of the machine shop practice division of the American Society of Mechanical Engineers and 16 local sections of the society. Last year it is stated that over 12,000 persons attended.

The technical program appended below embraces several technical sessions, round-table discussions, committee meetings, and plant visitations, as well as popular meetings, motion pictures showing various industrial processes, etc. Yale University, through the members of the faculty of Sheffield Scientific School, permits the use of Mason Laboratory, without a rental charge.

The committee in charge is preparing a catalog which will be available for distribution the latter part of August. Any one interested in receiving a copy, as

well as tickets to distribute to friends, should address Prof. S. W. Dudley, secretary of the committee, 400 Temple Street, New Haven, Conn.

The program of technical papers includes the following:

Review of Foreign Progress in Research in Machine Shop, C. A. Beckett.

Discussion of Research in Machine-Shop Practice in the United States, Wilfred Lewis, B. H. Blood and others.

Forecasting Demand for Machine Tools, E. F. DuBrul.

General Discussion of Education and Training for the Industries, J. A. Smith, George B. Thomas, and others.

Comparative Methods of Tool Design and Relation to the Quantity Production of Sheet-Metal Parts, D. M. Chason.

Application of Ball Bearings to Machine Tools, H. Reynolds.

Shop Measurements, Earle Buckingham.

Description of New Planer, G. E. Greenleaf.

Selling Standards to Manufacturing Organizations, E. C. Peck.

Standardization versus Individuality, L. D. Burlingame.

The Value of Standardization, with Examples of Accomplishment, G. T. Trundle, Jr.

Manufacturing Design of Ordnance Material, J. D. Pedersen.

### Plan for Wickwire-Spencer Reorganization

A special meeting of the stockholders of the Wickwire-Spencer Steel Corporation, Worcester, Mass., and Buffalo, has been called for Sept. 23 at Worcester, to act on a plan of reorganization, which would result in a new management, with Samuel F. Pryor as chairman of the board of directors, a complete financial rehabilitation, and the addition of a large amount of working capital. Mr. Pryor is chairman of the executive committee of the Remington Arms Co.

The plan calls for a new corporation, to be known as the Wickwire-Spencer Steel Co., probably to be organized under the laws of Delaware. Bonds of the old company would be exchanged dollar for dollar for bonds of the new company; preferred shareholders of the old company would receive five shares of new common stock for each share of preferred, and holders of old common would receive one share of new common for each 10 shares of old common. There would be no preferred stock.

The new corporation would have \$12,679,000 first mortgage 7 per cent bonds due in 1935; \$1,686,000 of 10-year 7½ per cent secured notes due in 1932; \$2,515,000 of five-year 7 per cent class A notes, \$3,639,400 of five-year 6 per cent class B notes, and 1,815,000 shares of common stock, no par value, of which 958,750 shares would be issued immediately.

The present company has outstanding \$12,679,000 in first mortgage 7 per cent bonds, \$1,686,000 in 10-year 7½ per cent secured notes, \$3,639,400 in notes of creditor banks, 76,817 shares of preferred stock of \$100 par value, and 434,000 shares of common stock of no par value.

Announcement of the special meeting states that an adjustment will be made with the bank creditors, who hold the notes of the corporation to the amount of \$3,639,400, by issuing to them 6 per cent class B notes to the face value of the loans. The sale of class A notes is planned to give additional working capital of \$2,515,000. Each preferred shareholder would receive the right to subscribe to \$20 of class A notes and 3½ shares of the common stock. The present common shareholders would receive the right to subscribe to \$2.25 of the class A notes and 63/160 of a share of the common stock. Arrangements for the underwriting of the class A notes and the common stock have been made, the underwriting syndicate consisting of Samuel F. Pryor and certain of his associates who have not been connected with the present company, T. H. Wickwire, E. H. Rollins & Sons, Lee, Higginson & Co., Spencer, Trask & Co., Hambleton & Co., Parkinson & Burr and others.

The announcement to stockholders states that arrangements have been made with Harry W. Goddard and the Spencer Wire Co., Worcester, whereby the \$200,000 annual principal payments toward the pur-

chase of the Goddard plant would be suspended for a five-year period, the company, however, paying 6 per cent interest on this amount.

A voting trust will be set up under the reorganization plan, to be made up of Frederic W. Allen, Samuel F. Pryor, Theodore H. Wickwire, Sr., and Richard B. Young, to which the new common shares would be issued, the stockholders receiving in lieu of them stock voting trust certificates.

### Simplification in Terne Plate and Conductor Pipe

Following the activities of the sheet steel industry in a survey of gages and sizes to determine the extent to which there is an excess variety, similar steps are being taken with regard to terne plate and eaves trough and conductor pipe, it has been announced by the division of simplified practice, Department of Commerce, which is cooperating in these movements.

Through the metal branch of the National Hardware Association there was appointed several months ago a terne plate simplification committee, which has made a careful study of weights and grades. This committee will recommend the elimination of two weights or grades out of the eight now being manufactured, it has been reported to the division. This recommendation will be offered at a forthcoming conference of the sheet steel industry for the action of manufacturers, distributors and users of this product. The committee consists of: Chairman, H. N. Taylor, N. & G. Taylor Co., Philadelphia; F. J. McNeive, W. F. Potts Son & Co., Inc., Philadelphia; Lee D. Brueckel, Weirton Steel Co., Weirton, W. Va.

The eaves trough and conductor pipe industry also appointed a simplification committee which has made a survey and is preparing to submit recommendations for eliminations from present variety at the same conference. The extent of these recommendations, it was explained, will depend somewhat upon action of the sheet steel simplification committee. This committee has as chairman A. Q. Moffatt, Wheeling Corrugating Co., Wheeling, W. Va.; H. O. Wilson, Berger Mfg. Co., Canton, Ohio; E. H. Hoffeld, Ferdinand Dieckmann Co., Cincinnati; George H. Hillibish, Eller Mfg. Co., Canton; R. L. McHale, David Lupton's Sons Co., Philadelphia; Karl Roth, Braden Mfg. Co., Terre Haute, Ind.; E. L. Westwood, Wheeling Metal & Mfg. Co., Wheeling.

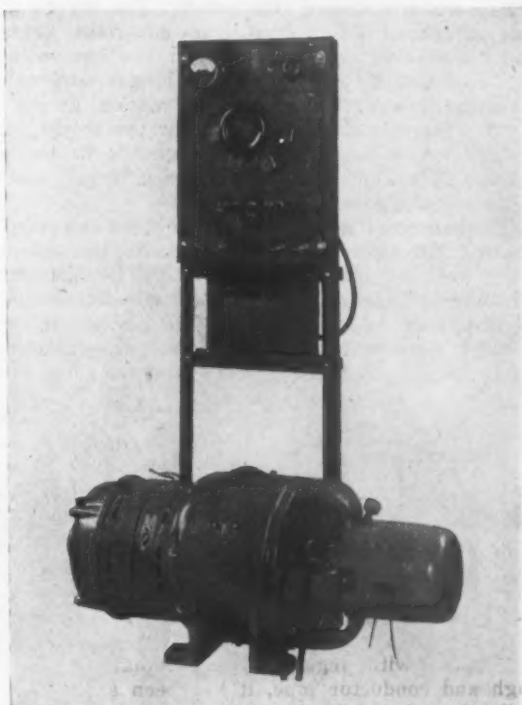
While the date of the conferences to act upon the recommendations of these committees has not been definitely fixed, it is expected that it will be held about the middle of September.

The estimates of the Canadian National Railways for this year call for an expenditure of \$56,000,000, with an additional \$9,000,000 for equipment, including rolling stock.

### Alternating-Current Welding Generator

The Allan Mfg. & Welding Co., Inc., Buffalo, has placed on the market in conjunction with its line of welding transformers, the 120-cycle welding generator shown in the accompanying illustration. In offering the new equipment the company states as its experience in many welding operations that alternating current has given better results on cast and malleable iron and as good results on steel and iron as the direct current welding sets.

The new generator is separately excited having eight poles for 1800 r.p.m. and ten poles for 1500 r.p.m. The frame is of cast steel with laminated pole pieces. Each pole piece is provided with but one coil, and all



Alternating-Current Generator for Use in Welding  
Cast and Malleable Iron and Steel

coils on pole pieces are connected in series. The armature is built up on a large diameter shaft which is carried on two ball bearings, and an extension of the shaft carries the exciter armature, the frame of which is cast integral with one end bell. Where the power supply is direct current, the exciter is eliminated. The apparatus may be driven either by belt, alternating or direct-current motors or by gasoline engine. It is available in several capacities, the most popular size being a 4 kw. set, having a current range from 50 to 200 amp. continuous output with an unlimited number of steps between the given limits. The same flexibility is said to apply to the larger sets. The trouble experienced in connection with the commutators of direct current generators and the difficulty in replacing burned out armature coils are said to be eliminated, as in the generator illustrated two slip rings replace the commutator and either eight or ten armature coils replace the many coils in the direct-current welding generator armature. In addition, the absence of complicated windings or connections of field coils is emphasized.

Ease of operation is a feature. The arc is said to be easy to start and maintain and is designed for smooth and rapid deposition of metal with necessary penetration. The generator incorporates the "semi-arc" feature for use in connection with the welding of light cast iron sections, particularly defective automotive cylinder blocks.

Salary reductions ranging from 10 to 25 per cent, affecting officials and office employees of the British Empire Steel Corporation, in the shipyards at Halifax and other points in Nova Scotia, as well as in Trenton, New Glasgow and Cape Breton, announced July 29.

### Evening Courses in Factory Management

The department of business management of the School of Commerce, Accounts and Finance of New York University, announces, among others, two courses in industrial management for the coming year.

J. P. Jordan, the industrial engineer and consultant in costs, will conduct a course in factory organization and management. This course deals with the fundamental principles underlying the organization and management of a modern industrial plant. The organization is built up step by step from the erection of the plant through the development of all the departments to a complete running concern. Among the phases of industrial management covered are labor and material control, production control, sales control, and the preparation and managerial use of cost and financial statements.

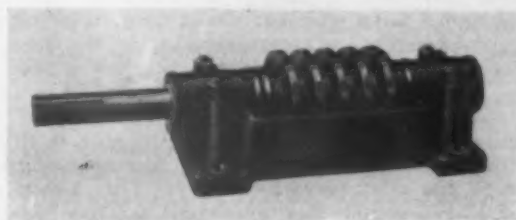
Prof. N. T. Fickers will give a course in factory engineering and cost reduction. This is a non-technical course dealing with the industrial engineering and management problems which come up every day in one form or another in every line of manufacturing and which must be solved correctly if the business is to be conducted successfully. An analysis is made of the various kinds of expenditures incurred in a manufacturing business and the relationship which these various expenses bear to the different functional units of the organization as a whole. One of the features of the course is the discussion of the effect of periods of depression on normal costs of manufacturing and of the various means employed to counteract the conditions existing in such periods.

Both of the courses will be given at New York University building, 32 Waverly Place, New York, commencing the week of Sept. 22. Mr. Jordan's course will be given on Mondays from 6 to 7.45 p. m. Professor Ficker's group will meet on Wednesdays, 8 to 9.45 p. m.

### Double Thrust Worm Box

A double thrust worm box for use with open worm gear drives when something less expensive than a completely inclosed unit is desired, has been placed on the market by the W. A. Jones Foundry & Machine Co., 4403 West Roosevelt Road, Chicago.

The device is designed to provide an accurate and rigid support for the worm shaft and it holds a liberal supply of oil. Finish thrust washers consisting of two steel and one of hard fiber are provided at both ends of the worm. The bearings are babbitted, bored



Worm Box for Use with Open Worm Gear Drives.  
Several sizes are available

and faced on the ends. The boxes are available in sizes to suit the standard cut steel worms made by the company.

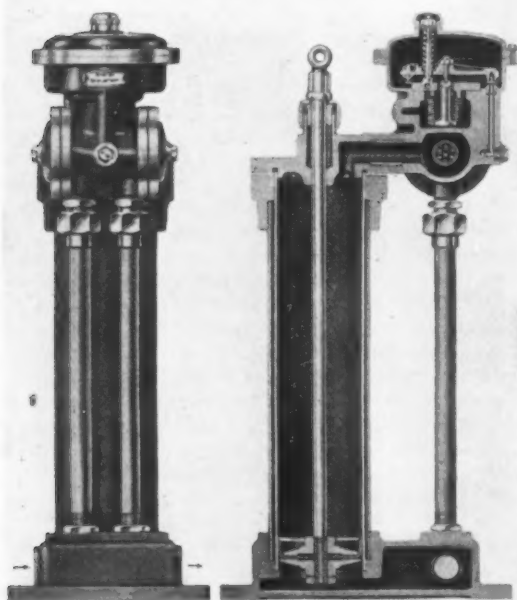
Skinner Bros. Mfg. Co., manufacturer of Baetz patent air heaters, St. Louis, reports that business in the St. Louis district for the first six months of this year showed a very substantial increase over the first six months of last year, and was better than in the Eastern district, where the company operates a plant at Elizabeth, N. J.

The Bennington Scale Works, Bennington, Vt., organized 14 years ago, has sold its plant, equipment, patterns and patents to the Fanning-Schuetts Engineering Co., Philadelphia, which will remove the business to that city, where the manufacture of platform scales will be continued.

## HYDRAULIC REGULATOR CONTROL

Standardized Relay and Pilot Valve Adopted for  
Wide Variety of Impulses—Applied to Coke  
Ovens, Gas Producers and Other Uses

Manufacture in the United States of the Arca automatic regulator, a device of Swedish origin, has been begun recently. It is handled by Arca Regulators, Inc., 452 Lexington Avenue, New York, under patent rights



Regulating Power Is Applied Through the Piston of the Large Hydraulic Cylinder, Which Is Actuated by Means of the Pilot Valve Above It

secured from the parent company, the Aktiebolaget Arca Regulatorer of Stockholm. British rights in the patent are taken care of by the British Arca Regulators, Ltd., London, in association with Bellis & Morcom, Ltd., Sheffield. In France, the device is handled by the Schneider Creusot Works. The inventor is Ragnar Carlstedt.

Designed for a wide variety of uses, including control of pressures, of temperatures, of the humidity of the air, of electric current, etc., this device takes the place in many instances of hand regulation, with its inherent disabilities, irregularities and lack of uniformity. The device depends wholly upon hydraulic control, a tiny stream of water flowing continually through the pilot valve and relay. This amounts to 12 or 15 gal. per hr. as a maximum, the opening varying according to the needs as determined automatically by the device itself.

Water is admitted for power purposes to the hydraulic cylinder (or discharged from it) whenever the pressure change forces the pilot valve far enough to the right or left to open up the slots at *L* or *L'*. These are located around the valve at 60 deg. intervals (See *Q*) and permit the flow of water into the chamber *M* and thence to the cylinder. Water pressure against the diaphragm *P* is counteracted normally by the spring surrounding the valve. If this pressure changes, it is clear that the pilot valve will move either in or out, thus opening a connection (through *L* or *L'*) from the port *A* to the chamber *M* or from chamber *M* to the discharge port *N*.

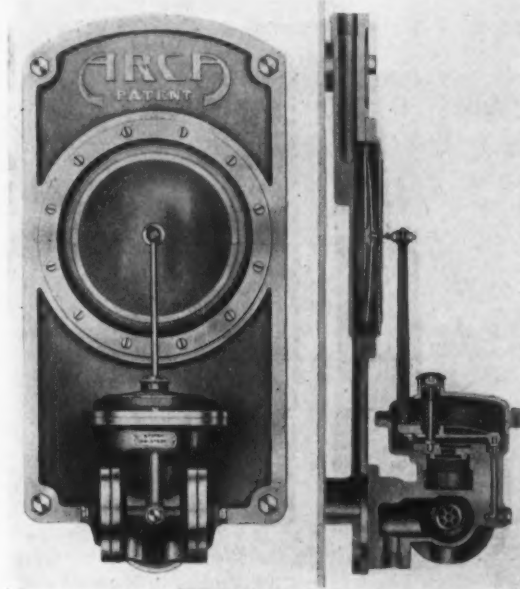
Flow of water is from the inlet *A* through the strainer screen *B*, thence through the annular passage *C*, between the axis of the valve *D* and a loosely floating pin. Coming out at *E* into the diaphragm chamber at the left end of the valve, water passes up and through an orifice of continually changing size under the disk

*G* at the end of a lever forming the moving relay head.

Movement of the relay head is occasioned by changing conditions in the apparatus being regulated, such as changing pressure, temperature or humidity. When pressure is to be regulated this change is applied to the relay head by the copper bellows *J* against the action of the spring *H*, which is set to such tension as may be needed. When the controlled pressure rises slightly, the bellows contracts and pushes the lever away from the jet at *G*, permitting more water to flow and thus lowering the pressure in the diaphragm chamber at *E*. Then the diaphragm and attached pilot valve move toward the left, uncovering the valve openings at *L'* and connecting the pressure cylinder with the discharge pipe. The counterweight then draws the hydraulic piston up and checks the tendency in the system, which produced this action. The reverse takes place, of course, with a drop in the controlled pressure.

As the relay is mounted upon the equivalent of knife edges at *K*, which serve as hinges, and as it is in continuous equilibrium or slight motion, as the case may be, there is no opportunity for the moving parts to stick. Any tendency there might be to wear the surfaces over which the water flows is largely nullified by the screening arrangement.

Thus there is a balance all the time between two opposing forces, one tending to raise the hydraulic piston and the other to lower it. The size of the hydraulic cylinder and its piston are determined by the resistance to be encountered in moving the valve or other element under regulation. Sensitiveness to

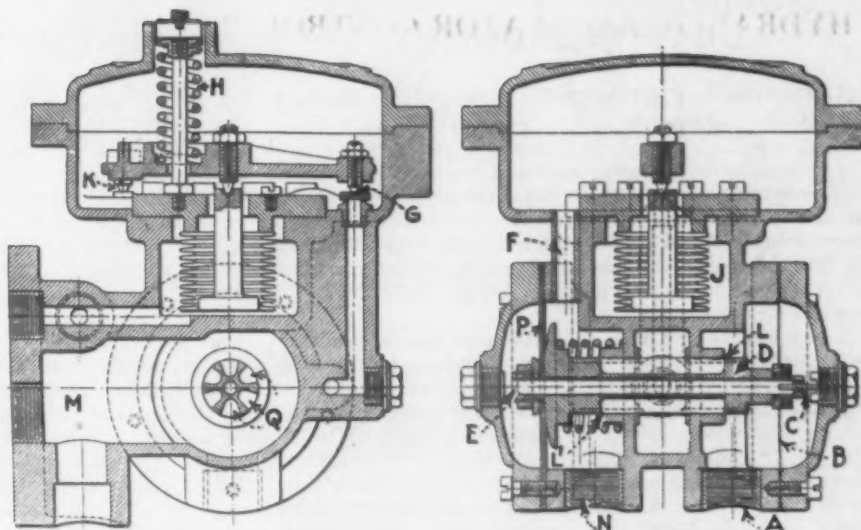


Application of Gas or Air Pressure to the Pilot Valve Is Made Through the Diaphragm and the Long-Arm Lever Shown

minor changes in conditions is shown by the fact that, when the apparatus is connected up with an ebonite temperature piece to control the relay, the close presence of a man's hand to this ebonite member or the breath directed upon that member causes the apparatus to operate. In a similar manner, a sensitive (humidity) member consisting of strands of cotton thread is affected enough by the moisture in the exhaled breath to operate the device; a fine spray of water from an atomizer makes it operate very quickly.

Two installations of this regulator have been put into the plant of the Bethlehem Steel Co., Bethlehem, Pa., one being arranged to control the pressure of coke oven gas used as a heating element in the soaking pits, while the other controls the steam pressure employed in the gas producers for one of the open-hearth groups. In controlling the coke oven gas, it is proposed to hold the pressure constant at about 5 in. of water, where previous conditions showed variation between 5 and 14 in. This will permit the heaters to give full attention to their pits and the steel in them, without having

Sections (at Right Angles) Through the Pilot Valve, Showing Method of Operation. The letters are references to description in the text



continually to watch for variations in gas pressure. Similarly in the producer house, with steam maintained constant, a more uniform gas will be furnished to the open-hearth furnaces. A similar installation is being put into the Swedesboro (Pa.) plant of the Rainey Wood Coke Co., to control the back pressure on the coke ovens and permit a more uniform gas.

In cases where the water used has considerable dirt or sand in it, a filter is used before the water reaches the apparatus. For most cases, however, the small filter screen *B* suffices. As there is an intermittent

reversal of pressure in the apparatus, this results in dislodging from the screen whatever particles may be caught by it and dropping them out of the system.

Electric regulation, or rather hydraulic regulation of electric properties, is another use of the apparatus, which has been adopted in some cases, it being possible to control changes in both voltage and amperage, as well as in their product—power. Control of water level in boilers is another special feature of the device, in which a small tank directly connected to the boiler forms the unit supplying the impulse.

## COAL AND ASH HANDLING

### Silo Type Bunkers Outside Power House and Conveyor Machinery

By means of conveyor machinery and silo type bunkers, the Fisher Body Co. has solved the coal and ash handling problem in its power houses.

One installation has been serving as a pattern. It is that in its No. 18 plant in Detroit. It consists of a 500-ton steel storage bin, 20 ft. in diameter and 55 ft. high, a track hopper, reciprocating plate feeder, a 20 x 30-in. two-roll crusher, a 20 x 15 x 7½-in. gravity discharge conveyor; and a 1-ton power-propelled weigh larry, for the coal handling. The ash handling system consists of a 40 cu. ft. capacity ash skip; a 40 cu. ft. capacity steel rocker bottom ash car, and a 16 ft. diameter by 16 ft. deep reinforced tile silo. The plants were installed by the Stearns Conveyor Co., Cleveland.

The lump coal is brought in and is discharged into the track hopper. Thence it is fed by means of the plate feeder into the crusher, which reduces it to 1¼ in. in size and under, at the rate of 50 tons per hour. It is then discharged into the gravity discharge elevator and elevated into the steel storage bin. The arrangement, provided in connection with the steel storage bin by the Stearns company includes a live storage of 60 tons. As soon as the live storage bin is filled the coal flows to the reserve storage. Coal does not go to the reserve storage until the live one is filled.

From the live storage coal is spouted directly to the boiler room, there being a weigh larry traveling the entire length of the plant. It is set up to draw a charge of coal and weigh it into each individual boiler. It is also power propelled and the operator may ride on the machine when filling the stoker hoppers. On the scales is provided an automatic feature incorporating a card punching system, so that the operator can keep a record of just what coal has been delivered to each boiler. The reserve storage of 440 tons can be drawn upon by means of an automatic feeder and reelevated into the live storage.

The boiler house is thus entirely independent of a

coal bunker, which commonly is placed inside of the building. By leaving the bunker outside, economy in power plant construction and elimination of a large amount of dirt and dust has been emphasized as an achievement in design, besides making possible good light and ventilation.

Ashes are drawn from large storage bins underneath the stokers and then are discharged directly into the Stearns rocker bottom dump car. The car has a capacity of 40 cu. ft. and is mounted on large diameter wheels with roller bearings. It is set to travel the entire length of the boiler room. The ashes are discharged into a storage hopper alongside of the ash track, which delivers them to a 40 cu. ft. capacity ash skip. They are then elevated by means of an electric hoist and discharged into an ash storage silo. The floor of the silo is constructed to provide drainage and thus prevent freezing in the winter. The ashes are delivered to the railroad cars by two hinged and counterweighted spouts.

The installation described is one of four silo systems which the Stearns company has erected for the Fisher Body Co. The other plants are the Turnstead Mfg. Co., a subsidiary, located in Detroit; the Mansfield Stamping Co. and the Fisher Body Co. at Memphis, Tenn.

### Examination of Failed Wrought Iron Bar

A short time ago the Interstate Commerce Commission submitted to the Bureau of Standards a specimen of a drawbar which had failed in service. The drawbar had been used to couple a locomotive and tender, and it was suggested that as these drawbars are subjected to very severe service which probably results in fatigue of the metal, breakage might be avoided by removing the drawbars from time to time and annealing them, thus relieving the stresses in the metal. However, in this particular case the wrought iron appeared to be of a decidedly inferior grade, and this was probably responsible for the failure of the bar under shock. It does not appear that annealing the drawbar would have been of any practical value.

## X-RAY IN INDUSTRY

### Application to Coal Analysis in England—Deeper Penetration of Steel

Considerable progress has been made recently, particularly in Great Britain, in the commercial application of X-ray analysis. This comparatively new development, concerning which considerable has been published in this country in the last year or two, is being applied both for the testing of metals and for the analysis of coal in Great Britain.

In a lecture by Dr. V. E. Pulling, of the research department at Woolwich, England, delivered at the University College in June, the statement was made that the development of the X-ray test had reached a stage where the process could be practically applied to industry. "Previously," said the lecturer, "investigators have not been able to see to a depth of more than  $\frac{1}{2}$  in. into iron and had been unable to detect faults smaller than  $\frac{1}{8}$  in. in diameter or width. It is now possible to see through 4 in. of steel and to discover the smallest of flaws."

The detection of faults in rough castings is of great importance to manufacturers as the saving in cost and time of machine work, which might otherwise have to be rejected, is substantial. "An important factor at present, however," said Dr. Pulling, "in radiography is the photographic emulsion. Radiation which penetrates 3 or 4 in. of steel passes too quickly through the thin emulsion of a plate. What is needed is emulsion of greater absorbent powers. Penetration of a substantial thickness of a material like steel is dependent on the electrical charge applied to the terminals of the X-ray tube. Rectified alternating current is used at Woolwich for the production of the necessary pulsating direct current, but the method is not satisfactory. If efficiency can be increased by securing a direct current of sufficiently high tension, penetration of 5 to 7 in. of steel will be possible.

### Asks Buyers of Castings to Designate Unit Weights

In an effort to get maximum attention to a request that approximate weights be indicated on blueprints supplied to jobbing foundries in connection with the preparation of bids, Thomas E. Durban, of the Erie Forge Co., Erie, Pa., has written the following letter to Secretary of Commerce Herbert Hoover:

We have been following carefully your efforts toward standardization and fully realize the benefits that are accruing to the country in the reduction of costs.

We wish to suggest to you that we know from experience that much time and expense can be saved by the jobbing foundries of this country if designing engineers would put the approximate weight on all blueprints sent out for bids.

It follows as a matter of fact that all these weights must be figured and must be figured when the design is made, in order to get at the approximate cost, and these weights could be used in all cases where per pound price is quoted and in this manner save a great deal of time in the engineering departments of the jobbing foundries, and make it possible to greatly expedite prompt quotations.

It occurs with us that we are frequently delayed days (and weeks, in many cases) in making prices, due to the necessity of our engineering department's being required to figure the weights from a large number of blueprints.

We may add that it is almost a universal custom to quote prices per pound on the estimated weights on all rough castings and on almost all work where no finish is required. This is true in ingots, billets and forgings, which form a large part of our production, as well as our steel casting business.

We hope our suggestion will seem to you of sufficient merit to justify you in making an appeal to the engineers and manufacturers of the country to consider the matter.

In the suit decided in the Federal Court in Cincinnati it was held that the patent of the Cowan Truck Co., No. 1,373,069, covering the modern lift truck, was infringed, and an accounting of damages for this infringement was likewise awarded the Cowan company.

As to the X-ray analysis of coal, C. Norman Kemp read a paper recently on this subject and discussed at the same time a new X-ray examining unit. According to *Chemical Age*, a British paper, an abstract of Mr. Kemp's paper is as follows:

"The method is an adaptation of the X-ray stereoscope technique, the samples examined being first submitted to some preliminary treatment to 'bring out' the constituents, such, for example, as treatment with pyridine to dissolve out soluble portions of the coal. In this way the mineral portions of the specimen are clearly shown.

"During the course of the work it became apparent that there might be a real place in industry for an X-ray unit of novel design, and free from the necessary complications associated with the equipment employed by the medical radiologist. The unit described consists of a steel tank provided with a lid of insulating material, and containing a high-tension transformer (65,000 volts), with a Coolidge tube of the radiator type clamped above it so that the cone of rays from the target of the tube was projected vertically upwards through a suitable glass or aluminum 'window' situated about the center of the lid. The tank is filled with special oil so that both transformer and tube were completely immersed. Two terminals are fitted to which the leads from an alternating source of supply of suitable voltage and periodicity were attached. In cases where only direct current is available, a small rotary converter is provided. The controls are of the simplest description, one being concerned with the variation within predetermined limits of the Coolidge tube filament current, and the other functioning as a starting switch. The latter automatically cut off the current when the hand was removed. It is obvious that all the real 'danger' is packed away in the tank, there being no external high-tension terminal, the X-rays emerging only by the window in the lid. The unit is manufactured by Watson & Sons (Electro-Medical), Ltd., London, whose courteous cooperation in connection with the present demonstration was testified to."

### Annual Statistical Report of American Iron and Steel Institute

The annual statistical report of the American Iron and Steel Institute for 1923, giving statistics in the usual comprehensive manner, has just been issued. The work of compilation was, as in past years, in charge of William G. Gray, and includes the statistics published in various bulletins and some additional information.

The report shows that the comparative production of leading iron and steel products of the United States Steel Corporation and of other companies changed very little last year. The Steel Corporation's percentage of pig iron was 41.4 compared with 44.2 in 1922, while in steel ingots and castings and all kinds of finished rolled products the percentages were the same, being 45.2 for the former and 42.9 for the latter. In production of iron ore the Steel Corporation's percentage for 1923 was 44.56 compared with 45.77 in 1922.

Three studies in metallurgical research will be undertaken in Pittsburgh during the coming year by the Carnegie Institute of Technology in cooperation with the U. S. Bureau of Mines. The problems to be investigated are: "Corrosion of metals due to high-pressure steam;" "A study of the atmosphere in open-hearth steel making furnaces as affecting refractories," and "The effect of various percentages of phosphorus on the physical properties of low-carbon steel."

The driving of 4080 rivets in 10 hr. by two gangs of three men each at the plant of the Ralston Steel Car Co., Columbus, Ohio, is regarded as a record at that plant. The riveting was done on tight bottom gondola cars and the number of each size of rivets driven was 136  $\frac{3}{4}$ -in.; 1020  $\frac{1}{2}$ -in., and 2924  $\frac{1}{4}$ -in. The hammers used were the No. 6 size of the Ingersoll-Rand Co.

## Pig Iron Production First Half of 1924

A special statistical bulletin of the American Iron and Steel Institute shows that the production of pig iron in the United States for the first half of 1924 was in striking contrast with that of the first half of 1923, the tonnage for the first six

months of this year being only 17,514,485 compared with 21,016,475 in 1923, the latter being the largest production for any half year in the history of the industry. The production of charcoal pig iron for the first half of 1924 was 107,792 tons.

### HALF-YEARLY OUTPUT OF PIG IRON BY STATES.

#### HALF-YEARLY PRODUCTION OF ALL KINDS OF PIG IRON.

States.	Blast furnaces.*				Production—Gross tons. (Includes spiegeleisen, ferro-mang., ferro-silicon, ferro-phosphorus, etc.)		
	In blast Dec. 31, 1923.	June 30, 1924.			First half of 1923	Second half of 1923.	First half of 1924.
		In.	Out.	Total.			
Massachusetts...	0	0	1	1	1,300		
Connecticut.....	0	0	2	2			
New York.....	18	9	18	27	1,489,701	1,462,109	1,212,276
New Jersey.....	2	0	4	4			
Pennsylvania.....	87	55	92	147	7,794,398	7,010,222	6,143,942
Maryland.....	4	2	4	6	446,797	359,683	345,470
Virginia.....	3	1	16	17			
Alabama.....	23	24	18	42	1,460,813	1,336,377	1,392,340
Georgia.....	0	0	1	1			
Texas.....	0	0	1	1			
West Virginia....	3	3	1	4	355,294	347,160	361,903
Kentucky.....	1	1	6	7			
Mississippi.....	0	0	1	1			
Tennessee.....	2	3	13	16	142,879	108,103	65,476
Ohio.....	48	30	47	77	4,978,327	4,369,633	4,136,401
Illinois.....	17	8	18	26	1,899,231	1,939,832	1,518,962
Indiana.....	14	10	6	16	1,825,750	1,987,366	1,862,202
Michigan.....	11	10	3	13			
Wisconsin.....	1	2	5	7	396,958	327,750	235,253
Minnesota.....	3	1	2	3			
Missouri.....	0	1	2	3			
Iowa.....	0	0	0	0			
Colorado.....	2	3	2	5	225,009	96,427	240,260
Utah.....	0	1	0	1			
Washington.....	0	0	0	0			
Total.....	239	164	263	427	21,016,475	19,344,671	17,514,485

\* Completed and rebuilding.

#### HALF-YEARLY PRODUCTION OF COKE PIG IRON.\*

States.	In blast Dec. 31, 1923.	In.	Out.	Total.	First half of 1923.	Second half of 1923.	First half of 1924.
New York.....	18	9	17	26	1,489,701	1,462,109	1,212,276
New Jersey.....	2	0	4	4	.....	.....	.....
Pennsylvania.....	87	55	88	143	7,785,632	7,006,258	6,143,942
Maryland.....	4	2	4	6	446,797	359,683	345,470
Virginia.....	3	1	16	17	1,460,813	1,336,377	1,392,340
Georgia.....	0	0	1	1	.....	.....	.....
Texas.....	0	0	1	1	.....	.....	.....
Alabama.....	22	23	16	39	1,448,404	1,329,663	1,384,963
West Virginia....	3	3	1	4	355,294	347,160	361,903
Kentucky.....	1	1	6	7	140,762	95,670	65,476
Tennessee.....	2	3	10	13	4,978,327	4,369,633	4,136,401
Ohio.....	48	30	47	77	1,899,231	1,939,832	1,518,962
Illinois.....	17	8	18	26	1,802,703	2,001,584	1,850,946
Indiana.....	14	10	6	16	.....	.....	.....
Michigan.....	4	4	0	4	.....	.....	.....
Wisconsin.....	1	1	5	6	437,359	311,407	386,354
Minnesota.....	3	1	2	3	.....	.....	.....
Missouri.....	0	1	1	2	.....	.....	.....
Iowa.....	0	0	0	0	.....	.....	.....
Colorado.....	2	3	2	5	.....	.....	.....
Utah.....	0	1	0	1	.....	.....	.....
Washington.....	0	0	0	0	.....	.....	.....
Total.....	230	156	245	401	20,874,240	19,222,999	17,406,693

\* Includes pig iron and ferro-alloys made with electricity, electricity and coke, etc.

#### HALF-YEARLY PRODUCTION OF ANTHRACITE AND MIXED ANTHRACITE AND COKE PIG IRON.

States.	In blast Dec. 31, 1923.	In.	Out.	Total.	First half of 1923.	Second half of 1923.	First half of 1924.
Pennsylvania.....	0	0	2	2	8,766	3,964	.....
Total.....	0	0	2	2	8,766	3,964	.....

#### HALF-YEARLY PRODUCTION OF CHARCOAL PIG IRON.

States.	In blast Dec. 31, 1923.	In.	Out.	Total.	First half of 1923.	Second half of 1923.	First half of 1924.
Massachusetts...	0	0	1	1	1,300	.....	.....
Connecticut.....	0	0	2	2	.....	.....	.....
New York.....	0	0	1	1	.....	.....	.....
Pennsylvania.....	0	0	2	2	.....	.....	.....
Alabama.....	1	1	2	3	14,526	19,147	107,792
Tennessee.....	1	0	3	3	.....	.....	.....
Mississippi.....	0	0	1	1	.....	.....	.....
Michigan.....	7	6	3	9	117,634	96,561	.....
Wisconsin.....	0	1	0	1	.....	.....	.....
Missouri.....	0	0	1	1	.....	.....	.....
Total.....	9	8	16	24	133,460	117,708	107,792

#### TOTAL PRODUCTION OF PIG IRON ACCORDING TO FUEL USED.

Fuel.	In blast Dec. 31, 1923.	In.	Out.	Total.	First half of 1923.	Second half of 1923.	First half of 1924.
Coke.....	230	156	245	401	20,874,240	19,222,999	17,406,693
Anthracite.....	0	0	2	2	8,766	3,964	.....
Charcoal.....	9	8	16	24	133,460	117,708	107,792
Total.....	239	164	263	427	21,016,475	19,344,671	17,514,485

\* Includes pig iron and ferro-alloys made with electricity, electricity and coke, etc.

† Includes mixed anthracite and coke pig iron.

### HALF-YEARLY OUTPUT OF PIG IRON BY GRADES.

#### HALF-YEARLY PRODUCTION OF BASIC PIG IRON.

States.	First half of 1923.	Second half of 1923.	First half of 1924.
New York, New Jersey.....	508,343	436,726	352,735
Pennsylvania—Allegheny County.....	1,864,180	1,860,369	1,624,006
Other counties.....	2,340,889	2,169,272	1,738,466
West Virginia, Alabama, Kentucky.....	819,848	784,924	815,328
Ohio.....	2,040,027	1,791,868	1,839,902
Indiana, Illinois.....	2,232,602	2,327,959	2,094,777
Mich., Wis., Minn., Mo., Colo., Utah	375,434	243,119	312,513
Total.....	10,181,323	9,614,267	8,777,732

#### HALF-YEARLY PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON.

States.	First half of 1923.	Second half of 1923.	First half of 1924.
New York.....	189,407	158,401	178,905
Pennsylvania.....	2,754,665	2,065,416	1,993,070
Md., West Va., Ky., Alabama, Tenn....	471,270	358,105	431,977
Ohio.....	2,138,361	1,912,412	1,584,839
Indiana, Illinois, Wisconsin.....	819,284	810,128	600,153
Total.....	6,372,967	5,304,522	4,788,944

\* Includes 130,768 tons of low-phosphorus pig iron.

#### HALF-YEARLY PRODUCTION OF FOUNDRY PIG IRON AND FERRO-SILICON.

States.	First half of 1923.	Second half of 1923.	First half of 1924.
Massachusetts, New York, New Jersey	588,657	709,369	577,021
Pennsylvania.....	506,990	604,937	509,931
Maryland, Va., West Va., Ky., Tenn....	320,925	257,213	154,510
Alabama.....	731,271	688,226	710,073
Ohio.....	443,335	382,678	440,861
Indiana, Illinois.....	138,732	182,708	194,467
Michigan.....	313,013	320,819	307,988
Wis., Minn., Iowa, Mo., Colorado, Utah	162,512	118,628	161,437
Total.....	3,205,435	3,264,578	3,056,288

\* Includes 115,766 tons of ferro-silicon.

#### HALF-YEARLY PRODUCTION OF MALLEABLE PIG IRON.

States.	First half of 1923.	Second half of 1923.	First half of 1924.
New York.....	161,042	122,247	89,274
Pennsylvania.....	59,116	68,100	36,851
Ohio.....	296,138	231,124	207,191
Ky., Ind., Illinois, Mich., Wis., Minn....	298,073	335,213	175,263
Total.....	814,371	756,683	508,579

#### HALF-YEARLY PRODUCTION OF FORGE PIG IRON.

States.	First half of 1923.	Second half of 1923.	First half of 1924.
New Jersey, Pennsylvania.....	118,513	75,554	84,618
Alabama.....	16,436	15,582	14,231
Ohio, Wisconsin.....	50,676	50,069	58,861
Total.....	185,625	141,805	157,710

#### HALF-YEARLY PRODUCTION OF SPIEGELEISEN AND FERRO-MANGANESE.

States.	First half of 1923.	Second half of 1923.	First half of 1924.
New York, Penna., Md., Ala., Wash....	188,835	187,882	179,460
Total.....	188,835	187,882	179,460

\* Includes 124,926 tons of ferro-manganese and 54,534 tons of spiegeleisen.

#### HALF-YEARLY PRODUCTION OF OTHER GRADES.

States.	First half of 1923.	Second half of 1923.	First half of 1924.
New York, New Jersey.....	25,143	29,368	14,341
Pennsylvania.....	5,181	5,171	3,569
Md., Va., West Va., Ky., Tenn., Ala..	20,478	25,299	12,958
Ohio.....	9,790	1,477	4,747
Indiana, Illinois, Wisconsin.....	7,307	13,609	10,157
Total.....	67,899	74,924	45,772

#### PIG IRON MADE FOR SALE OR FOR USE OF MAKERS IN THE FIRST HALF OF 1924.

Grades.	For sale.	For maker's use.	Total. Gross tons.
Basic.....	842,209	7,935,523	8,777,732
Bessemer and low-phosphorus.....	354,101	4,434,843	4,788,944
Foundry, including ferro-silicon.....	2,763,528	292,760	3,056,288
Malleable.....	465,365	43,214	508,579
Forge or mill.....	83,579	74,131	157,710
Ferro-manganese.....	35,613	89,313	124,926
Spiegeleisen.....	34,762	19,772	54,534
All other grades.....	19,996	25,796	45,772
Total.....	4,599,143	12,915,342	17,514,485

# Chain of Warehouses Standardized

Control System at General Office Shows Daily Changes  
in Receipts and Shipment of Material  
in All Branches



WAREHOUSING of steel is not a matter that ordinarily calls for much standardization, as the storage of steel gives little scope for imagination. This is true even where one company operates a number of branches. Each branch as a rule lays out the storage bins and arranges stock as appears best suited to local conditions.

Since the consolidation of interests of Edgar T. Ward's Sons Co. and the Columbia Steel & Shafting Co., such a standardization has been effected, the Ward company acting as distributor for Columbia products of cold drawn steel in addition to merchandizing products of other steel plants, such as drill rod, tool steel, sheets, electrical sheets, piano wire, tubing, Swedish steel, etc. No ordinary hot rolled steel is handled,

which avoids the necessity of equipment suitable for storage and handling of shapes, merchant bars, plate and heavy stocks. Instead, steels of relatively high value, or at any rate, of widely varying values, are handled, as indicated in the photograph reproduced at the head of the article. This shows a box containing 57 lb. of Swedish feeler gage steel, said to be equivalent in value to an average carload of commercial cold drawn steel.

The general offices of the Ward company are maintained in the Newark warehouse building, although the warehouse department there is just as much a separate unit with its own force, files, etc., as if it were located in Philadelphia, Boston, Chicago, or one of the other branch cities.

The standardization feature has been so carried out that almost identical storage arrangements are installed in the various warehouses. A clerk, or even a laborer, should occasion arise, could be moved from one warehouse to another, and in a few hours be perfectly at home, so to speak, so far as knowing the stock arrangement was concerned.

Another feature which is rather unusual is the fact

that chance of error on the part of men in the warehouse has been practically eliminated. The racks in which stock is kept are interchangeable and the stock in them is recorded by bin number. If a bin or rack becomes empty it may be loaded with steel of a different size from that carried in it before. This does not require the men to measure the stock to fill orders, as a complete record is kept at the warehouse office of the size in each bin, and all of the bins are appropriately numbered.

As an example of the way this works out, suppose an order is received at the warehouse for two bars of 1 15/16 in. shafting. The office makes out an order to ship two bars from bin C39. The laborer getting the shipment out has nothing to do beyond following the explicit order. This system costs somewhat more in clerical work in checking the contents of the racks, but minimizes chances of error on the part of the men in the warehouse in shipping wrong sizes to the inconvenience of customers.

A complete control system is carried at the general offices, showing the amount of stock carried in all warehouses, with corrections made daily. This is of value to indicate at a glance those sizes which are the fast sellers and those which are relatively dead stock. It also serves as a guide in placing orders for renewals of stock. Further, it acts as a check on clerical work at the warehouse.

This control system is carried in eight banks of shallow steel drawers, each drawer devoted to a range of sizes of similar material. The individual stock record in this file is on cards placed in a special holder which has a strip of transparent celluloid along its bottom edge stitched to form pockets. One pocket under each column is devoted to the stock record at each individual warehouse. These holders are so arranged in the drawer that the lower or index edge is exposed when the drawer is opened, according to the so-called visible index arrangement. The card on the front of the holder lists, under the specific warehouse name, the amount of stock located there. This is noted in black ink. When a shipment is made from that stock, a ticket of specified color for each warehouse is sent in to the general office, showing amount of shipment and balance on hand. This ticket is slipped



The View of Philadelphia Warehouse of the Edgar T. Ward's Sons Co.



**A Complete Control System at the General Offices Shows Daily Changes in Stock at the Various Warehouses. Varicolored tickets sent in each day to the general offices show date, amount and kind of stock shipped and the balance on hand**

A black and white photograph of a large, blank, rectangular board or chart. The board is divided into six vertical columns by thin lines. At the top of each column, there is a label: "BOSTON", "CHICAGO", "CLEVELAND", "DETROIT", "NEWARK", and "PHILADELPHIA". The board is mounted on a dark, textured surface. Along the bottom edge, there are several small, dark, rectangular objects, possibly clips or weights, holding the board in place. The overall appearance is that of a historical or archival document.

into the celluloid pocket at the bottom of the holder, thus showing at once the complete status of that size of material at each warehouse.

Each ticket serves also as a check against the one preceding it. Additions to stock are noted on this card in red ink. In some cases one warehouse draws on another to supplement stock or to complete an order. Or stock for which one territory shows no demand may

be transferred to another where there is a demand. Notation to cover such an addition in stock is made in green ink. Cards are tallied and changed each six months. The card on the reverse side of the holder shows at a glance a complete record of purchases of stock, from what mill, and to what warehouse shipped. This is the complete information of which the amount of the order only appears in red on the other card.



Is Offered as Typical of Any One of the Company's Other Warehouses

## BOOK REVIEWS

**Lead: the Precious Metal.** By Orlando C. Harn. Pages 323, 5½ x 7½ in., with many illustrations. Published by the Century Co., New York. Price, \$3.

A very readable book, by a man with a wide range of information, and a delightful literary style. His references range from Shakespeare to Curie. Much of the book, which is a piece of special pleading, (that George B. Heckel might tear to pieces, in the zinc interest) in favor of lead, has no business interest for iron workers, but it is to be recommended for its range of information. The author handles mining and smelting of lead ores, and the characteristics of the metal: incidentally slapping iron oxide as an oxygen carrier, a sort of Ferric-Oxide Mary; but he proves his point as regards lead paint being the standard coating for iron and steel. Perhaps he is wrong in naming red lead as valuable for priming sappy woods, by sealing the pores. This often hastens decay, the Boucherie and other sap excluding processes being better. As to roofs, the author omits to mention that on a steep roof a lead covering will crawl down by expansion and owing to its low tensile strength will not crawl back. The mystery of making lead S-traps by extrusion is laid bare diagrammatically.

Curiously enough, in mentioning the use of lead for organ pipes, he does not state that these are made from sheets that are not cast, but wiped by a straight-edge on a muslin-covered board with parallel wooden side-pieces equal in height to the desired sheet thickness. Such sheets are better than rolled ones for this purpose. The description of Frary metal, a sonorous lead-barium alloy, with great resistance to crushing, is interesting, and new to most. But that Babbitt should be mentioned in a book devoted to lead will cause many to say "how come?" and Babbitt to turn in his grave. The explanation of eutectics (in connection with 63-37 solders) is the best that your reviewer has seen.

Skipping the chapters on type metal, the chemical industries, and petroleum refining, and that on malleability and weight, musical instruments and ammunition, we find those on lead's relation to other metals, and the nature of its compound; the latter explaining the molecular theory (or puzzle) very neatly; next, paints, driers, lead in rubber, glass, etc.; and finally a most instructive and up-to-date section on lead from radium—worth reading twice. The author is both enthusiastic and entertaining.

**The Electric Furnace for Iron and Steel.** By Alfred Stansfield. Pages 453 +viii; 6 x 9¼ in.; figures and illustrations, 139. Published by the McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York. Price, \$5.

The electric furnace has become so important in the metallurgy of iron and steel that Dr. Stansfield has very properly written a special text book about it, and to this extent the present book is a new edition of his well known "Electric Furnace." The subject is of great interest to his adopted country, Canada, with its present and prospective large developments of hydroelectric power, but metallurgists in every country are indebted to him for the hard and painstaking work brought to such splendid result in the present book.

Like the old-fashioned sermon it is divided into three parts. Part 1 of 44 pages is largely introductory. The history and statistics of the subject are dealt with in an interesting way, followed by a short chapter on the main principles of the metallurgy of iron and steel. The longest chapter of Part 1 is on questions of electric supply, the various methods of connecting electric furnaces and the very important questions of regulation.

Part 2 is the longest section of the book, consisting of 172 pages, and is headed "Electric Smelting." It is probably the most valuable part of the book, and treats in separate chapters of the direct smelting of iron ores in electric furnaces, the indirect smelting of such ores, and the production of ferroalloys. Chapter 4, the first

chapter of this section, covers 94 pages and deals in a most interesting and authoritative way with the important subject of pig iron production in electric furnaces. It is noteworthy for a very careful study of Swedish furnaces in general, their construction, operation, costs, etc., based on personal investigation, and also includes a general discussion of other furnaces and methods.

The next chapter of 33 pages deals with the very interesting subject of direct production of steel. There is a splendid discussion of the reduction of the oxides of iron with carbon and carbon-monoxide, and of the need for separation of the stages of reduction and of melting, followed by detailed description of prominent direct reduction processes. The last chapter of this section takes up the types of furnaces and methods of production of the ferroalloys, starting with ferrosilicon, having a very good section on ferrochromium, and ending with ferrovandium. In regard to ferromolybdenum the statement that it is used in the production of high-speed tool steels is not quite accurate or comprehensive enough, in view of the wonderful development of forging and structural steels containing molybdenum. Also high-speed tool steels are generally higher in tungsten than the range given by the author, namely, 4 to 12 per cent. This chapter is particularly rich in good references.

The remaining section, Part 3, of 122 pages, deals with electric steel making, and is of great value because of its very detailed description of the various types of furnaces. They are considered under the headings of arc furnaces, induction and resistance furnaces. The recent development of electrically heated furnaces for heat treatment work, which is becoming of increasing importance in the iron and steel industry is only briefly mentioned, being reserved by the author for fuller discussion at a later time.

G. B. WATERHOUSE.

The strength of steel tubing is discussed in Technologic Paper 258 of the Bureau of Standards, in a pamphlet of 36 pages. The investigation covered combined column and transverse loading, including tests of columns and beams. It was made to determine whether experimental data confirmed the theory of struts. The paper is illustrated with a considerable number of diagrams and several half-tones and gives the data as well as the development of the theory. The results indicate that account must be taken of eccentricity in determining the strength of a strut. This eccentricity results from variation in wall thickness and in deviation from straightness. Considerable deviation in both these items was found in commercial tubing, resulting in variation in area of as much as 8 per cent.

### New Books Received

**The Planning, Erection and Operation of Modern Open-Hearth Steelworks.** By Hubert Hermanns. Pages 307, 7 x 9½ in.; illustrations 273; tables 28. Published by Ernest Benn, Ltd., 8 Bouverie Street, E. C. 4, London, England. Price, 42s.

**Moderne Metallkunde in Theorie und Praxis.** By J. Czochralski. Pages 292, 5¼ x 8 in.; illustrations 298. Published by Julius Springer, Linkstrasse 23-24, Berlin W. 9, Germany. Price, \$2.85.

**Diesel Maschinen.** A compendium of papers read before the Diesel Engine Congress in Berlin; translated into English. Published by V. D. I.-Verlag, G.m.b.H., Berlin S W 19, Germany. Price, \$2.25.

**The Journal of the Institute of Metals.** Vol. XXXI. Edited by G. Shaw Scott. Pages 679, 5½ x 8½ in.; illustrations 40. Published by the Institute of Metals, 36 Victoria Street, London, S. W. 1, England. Price, 31s. 6d. net.

**Transactions of the American Foundrymen's Association.** Vol XXXI, Proceedings of the Twenty-seventh Annual Meeting. Edited by Robert E. Kennedy. Pages 764, 6 x 9 in.; illustrated. Published by the American Foundrymen's Association, 140 South Dearborn Street, Chicago.

### Continuous Conveyor Electric Furnace Designed to Conserve Heat

A continuous conveyor type electric furnace designed by C. C. Armstrong of the Armstrong Mfg. Co., Huntington, W. Va., and in operation in that company's plant in the enameling of comparatively flat pieces, is shown in the accompanying illustration.

The loss of heat due to opening the doors of a furnace while charging and removing the work, the fluctuation of temperature due to the period opening of the doors, which may be harmful as well as slowing up the operation of fusing the enamel, were considerations leading to the development of the conveyor type furnace illustrated. The discomfort and delay in removing the work from the fork and the length of time that the furnace is empty under such conditions are said to have been factors, also. In this design the conveyor carries the work through the furnace from the charging end and discharges it at the opposite end. The doors of the furnace are adjusted to open only enough to permit the passage of the work in and out of the furnace. The furnace itself does not differ materially from the usual design. The heating chamber is 116 in. long, 32 in. wide and 30 in. high.

The conveyor is made up of a number of nichrome "burning bars" 30 in. long, 1 in. wide and  $\frac{1}{8}$  in. thick. These bars are spaced  $3\frac{1}{4}$  in. apart and fastened vertically in pairs to cast nichrome links. The chain is completed by means of connecting links made from  $\frac{3}{16}$  x  $\frac{3}{4}$ -in. nichrome bars, which are movably attached to the cast links by means of  $\frac{1}{8}$ -in. diameter nichrome pins. Three complete chains support the knife-edged nichrome "burning bars," one in the center and one at each end. In passing through the furnace, the conveyor chain slides over three 2-in. nichrome bars which extend through the heating chamber. These bars are supported on cross bars that rest on a ledge built into the side walls of the furnace under the side heating elements, and in the center on small piers about 12 in. apart. Resting on these cross bars are two  $\frac{3}{16}$ -in. nichrome plates 10 in. wide, which extend the length of the furnace and serve to protect the heating elements beneath them.

The conveyor returns over an idler sprocket through an insulated tunnel beneath the furnace. The chains and bars making up the conveyor are carried over cast steel sprockets at each end of the furnace. Three of the sprockets, which are 26 in. in diameter, are driven at the discharge end of the furnace by a motor. A change gear box providing nine speeds permits of varying the speed of travel of the conveyor, the work remaining in the furnace from  $1\frac{1}{2}$  to  $3\frac{1}{2}$  min., as desired. The sprockets at the charging end, which form an idling set, are provided with bearings that are adjustable to compensate for change in the length of the chain due to change in the temperature within the furnace. The centers of the driving and idling sprockets are 42 in. beyond the ends of the furnace to permit of convenient charging and discharging of work.

After passing through the furnace the work falls from the main conveyor to an auxiliary conveyor located well below the center of the driving sprockets at the discharge end of the furnace. The auxiliary conveyor travels at double the speed of the main conveyor. It is made of reinforced asbestos belt, 31 in. wide, is 10 ft. in length and is covered for 5 ft. of its length next to the furnace by an insulated tunnel, which serves as a cooling chamber, giving the work an opportunity to cool somewhat before it approaches the temperature of the outer air. The cooling chamber is intended also to retard loss of heat through the slightly raised door at the rear end of the furnace.

In addition to being protected by insulated doors counterweighted in the usual manner, there is attached

to each door a hood which is adjustable with the door for height. This hood entirely covers the main conveyor at the discharge end of the furnace and leaves at the charging end of the furnace only sufficient room for feeding in the work to be burned. The loss of heat due to the passage of the main conveyor through the furnace is said to be relatively unimportant. The temperature of the furnace is automatically controlled by a Leeds and Northrup controlling and recording instrument. Two operators are required for each furnace, one to place pieces on conveyor and one to remove them from the auxiliary conveyor.

The furnace illustrated has been in operation for several months, enameling steel shells 0.035 in. thick measuring  $7\frac{1}{4}$  in. square by  $2\frac{1}{4}$  in. high. It is said to handle these pieces on first coat work at the rate of 600 pieces an hour. On second and third white coats and on firing decals the rate is 800 pieces an hour. The loss due to improper firing is said to be practically



Electric Enameling Furnace the Feature of Which Is the Arrangement of the Conveyor. The conveyor chain is of nichrome. Nine speeds of travel are obtainable

negligible. The furnace was built and installed by the Electric Furnace Construction Co., 1015 Chestnut Street, Philadelphia.

### Tests on the Compressive Strength of Iron Ore

During the past month 125 compression tests have been made on specimens of iron ore from the Birmingham district by the Bureau of Standards. A portion of these tests was made in the usual manner while in others the specimens were subjected to vibration during the test by means of a specially constructed device to simulate the conditions in the mines. The strengths obtained varied from 10,000 to 17,000 lb. per sq. in. No appreciable reduction in strength was registered because of the vibrations.

In connection with this investigation, apparatus has been constructed for measuring the elastic properties of the ore and the lateral expansion of specimens due to compression.

Progress in the standardization of electric motor dimensions is reported to members of the National Machine Tool Builders' Association. The engineering departments of machine tool builders are now being asked to fill in a questionnaire for the benefit of the American Engineering Standards Committee which is now considering the subject. The questionnaire covers the extent that special motors are used for fitting to machine tools and in part the extent that tools are designed to take the motors of a particular electrical manufacturer and so on.

## FABRICATED STEEL BUSINESS

### Bookings at Recent Weekly Average, but Falling Off in Volume of Inquiry

Including 10,300 tons for Philadelphia subway work, awards for the week in fabricated structural steel work total 27,000 tons, substantially the average of the past ten weeks. New work coming to the fabricating trade shows some falling off, the amount of fresh projects appearing, being about 10,500 tons. The awards include the following:

Philadelphia, Broad Street subway, 10,300 tons, practically awarded to McClintic-Marshall Co.

Virginian Railway, two bridges, 300 tons, to Virginia Bridge & Iron Works.

Southern Railway, 700 tons in Tennessee, to McClintic-Marshall Co.

Baptist Temple, Rochester, N. Y., 2200 tons, to Genesee Bridge Co.

New Jersey Zinc Co., 400 tons at Palmerton, Pa., to Jones & Laughlin Steel Corporation, as mentioned last week.

Luzerne County & Electric Corporation, Hemlock Creek power station, 1800 tons, to Shoemaker Bridge Co.

Apartment house, West Sixty-ninth Street, New York, 500 tons, to Taylor-Fichter Steel Construction Co.

Y. W. C. A., East Seventeenth Street, New York, 300 tons, to Easton Structural Steel Co.

Bank building, Perth Amboy, N. J., 350 tons, to Hedden Iron Construction Co.

Borden Mills, Inc., Kingsport, Tenn., cotton mill, 800 tons, to McClintic-Marshall Co.

Union Indemnity Building, New Orleans, 1525 tons, to McClintic-Marshall Co.

Roosevelt Hotel addition, New Orleans, 1469 tons, to Levering & Garrigues Co.

Metropolitan Theater Corporation, theater building, St. Louis, 1196 tons, to Mississippi Valley Structural Steel Co.

Swift & Co., tractor runway system, Union Stock Yards, Chicago, 537 tons, to Gage Structural Steel Co.

California Hawaiian Sugar Refining Co., sections two

and three of Warehouse No. 1, Crockett, Cal., 1482 tons, to Moore Shipbuilding Co., San Francisco.

Chicago, Milwaukee & St. Paul Railroad, repairs to bridges near Sioux City and Waterville, Iowa, 159 tons, to Minneapolis Steel & Machinery Co.

St. Clements Hall, Chicago, 150 tons, to A. Bolter's Sons, Chicago.

Michigan Alkali Co., Detroit, boiler house, 4000 tons to Whitehead Kales Co.

Vanadium Alloy Steel Co., Latrobe, Pa., hammer shop, 200 tons, to Jones & Laughlin Steel Corporation.

First National Bank Building, Huntington, W. Va., 500 tons, to McClintic-Marshall Co.

Kosmos Portland Cement Co., Louisville, 3 barges, 700 tons, to American Bridge Co.

Detroit Edison Co., Detroit, transmission towers, 400 tons, to American Bridge Co.

City Savings & Trust Co., Alliance, Ohio, bank building, 200 tons, to Morgan Engineering Co.

Union Savings & Trust Co., Steubenville, Ohio, bank building, 150 tons, to Moss Iron Works.

New York, Chicago & St. Louis (Nickel Plate Railroad), bridge work in Cleveland, 230 tons, to McClintic-Marshall Co.

### Structural Projects Pending

Inquiries for fabricated steel work include the following:

Seaboard Air Line, bridge work, 400 tons.

Interborough Rapid Transit Co., New York, repair material for elevated lines, 300 tons.

Hecht & Co., department store, Washington, 1400 tons.

Standard Oil Co., boiler house, Jersey City, 900 tons.

Two apartment houses, West Ninety-third Street, between Amsterdam and Columbus Avenues, New York, 700 tons.

Five-Cent Savings Bank, Boston, bank building, 1100 tons.

Killian Building, Cedar Rapids, Iowa, 2000 tons.

Second National Bank Building, Saginaw, Mich., 2000 tons.

University School, Cleveland, 250 tons.

Magnolia Petroleum Corporation, Houston, Tex., tank roofs, 1300 tons.

## RAILROAD EQUIPMENT BUYING

### Few Developments in Locomotive or Freight Car Business

Orders for 290 cars, inquiries for 650 cars and an inquiry for 25 locomotives describe the low level of activity in the railroad equipment field. The following items cover the chief developments:

The Illinois Steel Co. is inquiring for 25 locomotives.

The Union Traction Co. of Indiana has purchased 15 passenger cars from the St. Louis Car Co.

The Manila Railroad Co. has ordered 30 flat cars of 30 tons capacity for the Philippines from the Koppel Industrial Car & Equipment Co.

The Quaker Tank Line Co. has placed 75 tank cars of 10,000-gal. capacity and 125 of 8000-gal. capacity with the Standard Tank Car Co., Sharon, Pa.

The Great Northern Equipment Co., St. Paul, is inquiring for 20 tank cars.

The Atlantic Coast Line is inquiring for 200 phosphate cars of 50 tons' capacity.

The New York Central has ordered 60 express refrigerator cars from the Merchants Dispatch Transportation Co.

The Bangor & Aroostook is considering the purchase of material to build 50 flat cars in its shops at Derby.

The Chicago, Indianapolis & Louisville is inquiring for 250 underframe constructions.

The Caloric Co., New York, is inquiring for 10 tank cars of 7000-gal. capacity.

The Central of New Jersey is inquiring for 25 to 30 dump cars.

Hackley-Sidwell, Mexico City, Mexico, is inquiring through the car builders for 40 flat cars of 40 tons' capacity.

W. R. Grace & Co., New York, are inquiring for 80 low side gondola cars and 24 tank cars for the Ferro Caril de Iquique a Pintados, Chile.

The Siam State Railways are inquiring for 50 box cars, 50 open high side cars, 75 hopper cars and 25 high side cars. Specifications and drawings are on file with C. P. Sandberg, 100 Broadway, New York.

## STEEL AND INDUSTRIAL STOCKS

The range of prices in active steel and industrial stocks from Monday of last week to Monday of this week was as follows:

	Low	High		Low	High
Allis-Chalmers ..	54	56½	Int. Har. pf.....	110	110
Allis-Chal. pf....	97½	97½	Lima Loco.....	61½	63
Am. B. S. & Fdy. 81½	84½	84½	Nat. Acme.....	5	6½
Am. B. S. & F. pf.107½	107½	107½	Nat. En. & Stm. 19½	24½	24½
Am. Can .....324½	128½	128½	Nat. En. & S. pf. 71	76	76
Am. Can pf.....115½	116½	116½	N. Y. Air Brake. 41	43½	43½
Am. Car & Fdy.169½	173½	173½	Otis Steel.....	7	8
Am. Locomotive.. 78½	81½	81½	Otis Steel pf....	48½	49½
Am. Loco. pf....120	120	120	Pressed Steel Car 39	44½	44½
Am. Radiator....107	114½	114½	Pressed Steel pf. 68	76½	76½
Am. Steel Fdries. 35½	37	37	Replogle Steel... 11½	13	13
Am. Stl. Fd. pf..104½	104½	104½	Republic ..... 47	49½	49½
Bald. Loco.....118½	123½	123½	Republic pf..... 87	87½	87½
Bald. Loco. pf...114½	114½	114½	Sloss-Sheffield .. 65½	67½	67½
Beth. Steel..... 43½	44½	44½	Stl. of Canada pf.102	102	102
Beth. Stl. 7% pf. 91½	92	92	Superior Steel... 28	28	28
Beth. Stl. 8% pf.106	107	107	Transue-Wms. ... 33	33	33
Br. Em. Steel... 6	6	6	Un. Alloy Steel.. 23½	25	25
Chic. Pneu. Tool. 86½	86½	86½	U. S. Pipe..... 92	106½	106½
Colo. Fuel..... 50½	54½	54½	U. S. Pipe pf.... 93½	94	94
Crucible Steel... 53½	56½	56½	U. S. Steel.....106½	110	110
Deere pf..... 73	75	75	U. S. Steel pf....121½	121½	121½
Gen. Electric....271	281	281	Vanadium Steel.. 23½	25½	25½
Gt. No. Ore Cert. 29½	31½	31½	Va. I. C. & Coke 37½	37½	37½
Gulf States Steel. 71½	75½	75½	W'house Air Br. 93	94½	94½
Inland Steel..... 35½	36	36	Y'town S. & T.. 69½	70	70
Int. Har..... 92½	95½	95½			

The Otis Steel Co., Cleveland, reports a net loss of \$273,529 after interest and other charges but before depreciation for the six months ending June 30. This compares with a net income of \$809,813 during the first half of 1923. Manufacturing profits were \$782,423 as compared with \$1,558,493 during the first six months of last year.

## EXPORT DEMAND MAINTAINED

### Japan Inquires for Rails, Gas Pipe and Boiler Plates—China Buys in Europe—Mills Firmer on Sheets

NEW YORK, Aug. 12.—Export to South American markets continues better than for some time past, but evidences of German competition returning to these markets and to the Far East are accumulating. Chinese markets are suffering from large stocks of material, much of which was purchased speculatively, following the Japanese earthquake, under the impression that Japan in acute need of prompt delivery on certain materials would buy in China. The contrary seems to have been the result, for Japanese sellers, according to reports, have been shipping a wide range of materials into China.

Appearance of new inquiries to replace business that has been awarded serves to maintain a moderate activity in Japanese trade. It is reported that the order of the Nippon Oil Co., placed last week, was for a total of 84,000 boxes, Mitsui & Co. receiving 28,000 boxes and Iwai & Co. 56,000 boxes, instead of 28,000 as originally stated. Considerable difficulty in placing it with a mill is reported to have been encountered by the exporters.

One of the outstanding inquiries from Japan at present is the call for bids by the Nagoya Gas Co. on 275,000 ft. of  $\frac{1}{2}$  to 2-in. galvanized gas pipe. The inquiry for 25-miles of 60-lb. rails for Chosen, reported last week, is from the Chosen State Railways. Bids are being submitted, c.i.f. Fusan or Masanpho, Chosen. Other railroad business in the market from Japan includes 290 tons of circular boiler plates for locomotives.

### Exports of Railroad Equipment

Reports of the Department of Commerce show that, during the fiscal year ended June 30, steam locomotives to the number of 279 were exported from the United States compared with 276 in the previous year. The total value was \$4,188,236 in the current year and \$5,307,075 in the previous year. This gives average unit values of \$15,010 and \$19,230 respectively, the reduction in unit value being about 22 per cent.

During the same period the exports of freight cars aggregated 3693 in the current year and 10,453 in the preceding year. The values were respectively \$3,431,877 and \$11,729,962. The unit values in the two years were \$929 and \$1,122, the fall in unit price being about 19 per cent.

Canada received the largest share of the locomotives in both years, taking 79 in the current year and 96 in the year before. The largest number of freight cars sent to any one country this year went to Cuba, the number being 1071. Last year Poland and Danzig together took 4279 cars, while Germany took 2400.

### Addition of Flint Malleable Castings Co.

The Flint Malleable Castings Co., Flint, Mich., is offering \$350,000 of an authorized issue of \$500,000 common stock and will shortly let contracts for the construction of a single-furnace plant, the buildings and layout, however, being designed for the addition of other units as conditions warrant. Powdered coal fuel will be employed. A site has been acquired, grading is under way, railroad and water connections are being made, and it is expected that the plant will be operating in time to share in the seasonal activity of the automotive industry next spring.

Officers of the company are: President, John M. Barringer, president Flint Foundry Co. (gray iron), with plants at Flint and Marshall, Mich., and formerly connected with malleable plants at Ironton and Zanesville, Ohio, and Lancaster, N. Y.; vice-president, Fred J. Weiss, general manager of the Flint Motor Axle Co.

The Imperial Government Railways are said to be contemplating the purchase of 10,000 tons of rails. A recent order of 10,000 tons by this railroad is being filled by European makers. The 4000 boiler tubes for the South Manchuria Railway Co., in the market for several months, are said to have gone to a New York export house.

Few small sheet orders are being placed, as mills are not inclined to shade prices, except on large tonnages. The leading export interests have again advanced quotations on light gage black sheets and are now holding to a range of \$90 to \$91 per ton, c.i.f. Japanese port. One export house in New York has purchased about 1000 tons of light gage sheets delivered Japan.

Chinese merchants exhibit but little interest in quotations submitted by American exporters. Exporters claim that American manufacturers are asking prices on wire shorts that are several dollars too high to permit of business. As much as \$51 per ton, f.a.s. New York, is asked by some sellers.

The May imports of second-hand material by China, through the port of Shanghai, show an interesting change of the source of supply. Generally, Chinese merchants obtain a large part of their wire shorts, plate cuttings and other second-hand material from the United States. The May imports through Shanghai show 1307 gross tons of cobbles and wire shorts from the United Kingdom, compared with only 12 tons from the United States. France furnishing 48 gross tons, Belgium 475 gross tons, and Germany 86 gross tons, all passed the United States on these products. On exports of galvanized wire shorts, however, the United States led with 240 gross tons against 216 gross tons from the United Kingdom, 93 gross tons from Belgium and less than one ton from Holland.

and director of the Imperial Forge Co. of Indianapolis; secretary, Carl W. Bonbright; treasurer, Edwin W. Atwood. Charles H. Bonbright, president Flint Motor Axle Co. and Imperial Drop Forge Co., is also a director, and sales will be in charge of Charles A. Reynolds, president Northern Foundry Co., Alpena, Mich. It is estimated that the various industries of Flint consume upward of 50,000 tons of malleable castings annually.

### Jurisdictional Disputes Considered

The National Board for Jurisdictional Awards in the Construction Industry held the shortest session in its history when it met at Washington on Monday, Aug. 4. Four cases relating to jurisdictional disputes among iron workers, laborers and lathers, bricklayers and roofers were disposed of. The following officers were elected: Chairman, Rudolph P. Miller, New York, representing the Federated American Engineering Societies; vice-chairman, John Coffield, Chicago, representing the Building Trades Department of the American Federation of Labor; secretary, William J. Spencer, Washington, representing the Building Trades Department of the American Federation of Labor.

In continuation of a policy recently adopted to conduct meetings of the board in some of the more important cities of the country in order that those in the industry might get a better idea of how it operates, it was decided to hold the next meeting in St. Louis the week beginning Monday, Dec. 8, 1924.

At a celebration held on the evening of Aug. 4 by the Taylor-Wharton Iron & Steel Co., High Bridge, N. J., in honor of the employees longest in its service, statistics presented by S. M. Buck, works manager, showed that 281 employees had been with the company 15 years or more, 99 had served a quarter of a century, there were 30 who had spent 35 years, 13 whose service covered 45 years and 11 who have an unbroken record of a half-century with the company.

# European Continental Markets Chaotic

Sterling Quotations Mainly Withdrawn—France Seeking  
Cheaper Fuel—Luxemburg Order Books Flat—  
British Market Quiet, with Lower Prices

(By Cable)

LONDON, ENGLAND, Aug. 12.

**M**ARKET conditions generally are unchanged. Demand has not yet shown a revival, though some inquiries for Continental account have been following the appreciation of the franc. Domestic consumers, lacking confidence, are purchasing only for urgent requirements.

Hematite is dull and weak. Foreign ore is stagnant and buyers are endeavoring to secure a postponement of deliveries. Bilbao Rubio nominally is 22s. (\$5.02) c.i.f. Tees.

Finished steel is dull and unchanged, but the outlook is brighter on London Conference hopes.

Henry Bessemer & Co., Ltd., has closed the Bolton Steel Works, which has been acquired by Thomas W. Ward, Ltd., Sheffield, for dismantling.

Tata Iron & Steel Co., Ltd., Jamshedpur, India, has booked 14,000 tons of steel rails for India.

## On the Continent of Europe

Continental position is chaotic and prices are all nominal. The works have withdrawn sterling quotations. Merchants offer tees at £7 2s. 6d. (1.45c. per lb.) f.o.b. Merchant bars are quoted up to £6 10s. (1.32c. per lb.) f.o.b.

Good business with India is being done, including black and galvanized tubes, cost and freight to India, at 74 per cent discount for black and 64 per cent discount for galvanized.

In Germany only eight furnaces are blowing in the Siegerland district out of a total of 30.

In France 135 furnaces were blowing July 1. French output of iron and steel is declining, owing to quieter demand.

Tin plate is quiet, but makers are asking above the schedule, on account of the rise in tin prices. Some business has been done up to 23s. (\$4.90) basis I C f.o.b. Far East is inquiring, but no business yet has developed.

Galvanized sheets have moderate sales in small parcels. The works are well sold and prices are firm.

Black sheets show an easier tendency and there is some demand on Japanese specifications. There are hopes of effecting business; the price is unchanged, but makers are inclined to consider concessions.

## LUXEMBURG IRON AND STEEL

Market in the Grand Duchy Inactive and Order Books Becoming Flat

LUXEMBURG, July 23.—June had begun with the rise of appreciating currencies, accompanied by a slight firming up of prices in francs and a certain improvement of business. But the expected revival of export trade did not come. Without widely fluctuating, exchange rates remained uncertain throughout, and this uncertainty has led to a setback in the volume of orders and to a continuous frittering away of prices during the whole month of June.

The German Government has authorized the importation into Germany through Wintersdorf of the tonnages exempted from import dues by the Versailles Treaty, and Luxemburg ironworks were thus enabled to send off quantities that had been in abeyance for several weeks. The German market has been paralyzed by the financial crisis in that country, and the restriction of credits by the Reichsbank has aggravated that

British and Continental prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.56 per £1, as follows:

Durham coke, del'd...	£1 6s.	to £1 6½s.	\$5.93 to \$6.04
Bilbao Rubio ore...	1 4		5.47
Cleveland No. 1 fdy...	4 10		20.52
Cleveland No. 3 fdy...	4 5		19.38
Cleveland No. 4 fdy...	4 4		19.15
Cleveland No. 4 forge	4 3		18.92
Cleveland basic	4 2½		18.81
East Coast mixed...	4 13		21.20
East Coast hematite...	4 19	to 5 0	22.57 to 22.80
Ferromanganese	16 0	and 16 0*	72.96 and 72.96*
Rails, 60 lb. and up...	8 5	to 9 0	37.62 to 41.04
Billets	7 15	to 8 5	35.34 to 37.62
Sheet and tin plate bars, Welsh	8 12½		39.33
Tin plates, base box...	1 2½	to 1 3	4.87 to 4.90
Ship plates	9 5	to 9 15	1.88 to 1.98
Boiler plates	13 0	to 13 10	2.65 to 2.75
Tees	9 7½	to 9 17½	1.91 to 2.01
Channels	8 12½	to 9 2½	1.76 to 1.86
Beams	8 7½	to 8 17½	1.71 to 1.81
Round bars, ¾ to 3 in.	9 15	to 10 5	1.98 to 2.09
Galv. sheets, 24 g...	18 5	to 18 10	3.72 to 3.77
Black sheets, 24 gage	13 0	to 13 5	2.65 to 2.70
Black sheets, Japanese specifications	15 5		3.10
Steel hoops	10 15	and 12 10*	2.19 and 2.54*
Cold rolled steel strip, 20 gage	17 0		3.46

\*Export price. †Ex-ship, Tees, nominal.

## Continental Prices, All F. O. B. Channel Ports

(Nominal, no definite quotations)

Foundry pig iron:			
Belgium	£3 18s.	to £4 0s.	\$17.78 to \$18.24
France	3 18	to 4 0	17.78 to 18.24
Luxemburg	3 18	to 4 0	17.78 to 18.24
Billets:			
Belgium	5 12½		25.65
France	5 12½		25.65
Merchant bars:			C. per Lb.
Belgium	6 2½		1.25
Luxemburg	6 2½		1.25
France	6 2½		1.25
Joists (beams):			
Belgium	6 2½		1.25
Luxemburg	6 2½		1.25
France	6 2½		1.25
Angles:			
Belgium	8 0	to 8 5	1.63 to 1.68
½-in. plates:			
Belgium	7 10		1.53
Germany	7 10		1.53
¾-in. plates:			
Luxemburg	7 10		1.53
Belgium	7 10		1.53

situation. The purchasing capacity of Germany every day gets smaller.

The great export markets, British dominions and colonies, China and Japan, had an expectant attitude and were waiting for further fall of prices. In neighboring and Scandinavian countries, Luxemburg has met with the competition of German works, bent on obtaining orders at any price for alleviating the present dearth of money in Germany.

The order books of our principal metallurgical works have gradually emptied in June, and any new business that cropped up was the object of keen competition. The situation of the industry in Luxemburg has therefore become rather difficult. Prices obtained are far from satisfactory, and the present number of active furnaces has been maintained in blast simply to avoid an increase of cost prices. Besides, it will be noted

that the production in June has shown a new decrease on that of the previous month.

#### Prices Current

At time of writing the Luxemburg industry suffers from the same slackness of trade which is affecting French and Belgian ironworks and which the difficulties experienced by the London Conference have accentuated. Prices asked for at Antwerp by Luxemburg ironworks are about the same as those quoted by Belgians, or slightly inferior. Prices quoted (all in Belgian currency) are:

Foundry pig iron, fr. 385 to 390 (\$17.97 to \$18.21).  
Basic pig iron, fr. 365 to 370 (\$17.04 to \$17.27).  
Semi-finished products; blooms (basic), fr. 495 to 500 (\$23.11 to \$23.35).  
Billets (basic), fr. 525 to 535 (\$24.51 to \$24.98).  
Largets (basic), fr. 560 to 565 (\$26.15 to \$26.38).  
Steel rolled products; bars, £6 2s. 6d. or fr. 570 to 575 (1.19c. to 1.20c. per lb.).  
Beams, £6 or fr. 560 to 565 (1.17c. to 1.18c. per lb.).

## FRENCH WANT CHEAPER FUEL

### Iron Competition Intense and Sales Scarce—Coke Being Imported from England

PARIS, FRANCE, July 25.—The lack of confidence was increased this week through all the information published about the London Conference, and the exchange rate of sterling was constantly above 85 fr.

Production is now considerably larger than the tonnage sold, especially for raw and semi-finished products, and French ironmasters fully realize the necessity of further rebates on prices to push up the demand. This is all the more necessary on the export market, where competition is extremely keen.

In such circumstances, and as it would be inadvisable to attempt now a reduction of their wage bill, our ironmasters can hope only for a reduction of the prices they have to pay for fuel. On the other hand, they are prepared to cut down their profit margin to the utmost limit. Of course, if there existed cartels of French producers for the export of products, the situation would not be so bad as now. Unfortunately, although this question is often talked about here, no practical steps have been taken toward the creation of such organizations.

The agreement between the M.i.c.u.m. and the German Association of Mechanical Industries, which expired on July 15, has been renewed for one month. The new agreement stipulates that the export tax is to be uniformly reduced to three-eighths of the general tariff. This measure will favor metallic construction and the production of boilers and machinery in Germany. Besides, it will permit resumption of trade between German occupied and non-occupied territories.

**Coke.**—During the first 23 days of July the ORCA has received 281,664 tons of reparation coke, a daily average of 12,246 tons. So far, notwithstanding the reduction of the price of coke in the Ruhr as from July 1, the price of that coke to French consumers has not been modified. A number of French ironmasters are asking for a decrease of coke shipments from the Ruhr. The reasons for this attitude are: First, the fact that stocks of coke now exceed the storage capacity of the works; second, the greater probability of a reduction of the present pig iron production than otherwise; third, the impossibility for many French ironmasters to bear any longer the financial burden of carrying these huge stocks of fuel. Besides, indemnity coke is at present the most expensive of all the cokes used in France.

Having heard that the price of Durham blast furnace coke would be reduced to 21s. to enable British pig iron to sell more easily for export, French interested circles have procured in England substantial tonnages of coke at interesting prices. French imports of British coke so far in July have been greater than in June.

**Pig Iron.**—Production tends to diminish, but it is still very important. The market is quiet, especially for phosphoric pig iron. Chill cast pig iron, No. 3

P. L., from Homecourt, is being quoted fr. 315 to 320 (\$16.43 to \$16.69), according to Si. content. But average prices vary between fr. 325 and 335 (\$16.95 and \$17.47), with fr. 10 less for P. R. quality.

In hematite selling is rather satisfactory at fr. 430 to 440 (\$22.43 to \$22.95), either f.o.t. producing works or delivered, according to the districts and the situation of the producers. As British hematite was not quoted below £5 2s. 6d. c.i.f., viz., fr. 435 (\$22.69) at the exchange rate of fr. 85, French producers are favorably situated for getting Belgian and Dutch orders, although, of course, they should make a certain rebate on the above price.

Belgian foundry pig iron is quoted about fr. 385 to 395 (fr. 320 to 328 French, or \$16.70 to \$17.10). Nominally, Lorraine and Luxemburg would quote fr. 5 to 10 higher. For export, French ironmasters have booked at Antwerp a few good orders for basic pig iron at about fr. 300 (\$15.65) per ton, f.o.t. Lorraine ironworks.

We hear that the Calais ironworks of the Société des Acieries de France, which included a blast furnace producing hematite, have just been laid idle and will shortly be put on auction.

**Ferroalloys.**—Since the recent shading of prices transactions have become more active. In spite of German competition we are selling ferros in Belgium and Luxemburg. But for ferromanganese French producers can hardly quote so low as the Germans, who now are asking £15 10s. (\$68.20), or £1 less than the British producers. Of course, it is true that just now German producers care less about the prices themselves than about getting the money to invest in Germany at a high rate of interest.

Prices quoted: for ferromanganese, 76 to 80 per cent Mn., about fr. 1450 (\$75.60) per ton delivered; spiegel, 10 to 12 per cent Mn., fr. 540 (\$28.16), and 18 to 20 per cent Mn., fr. 675 (\$35.20), f.o.t. producing works.

**Semi-Finished Products.**—Market quiet as far as inland transactions go and under much competition for export. Fr. 40 (\$20.86 per gross ton) for blooms seems to be an average base price. For export, Belgium and Luxemburg are quoting the same prices, while Lorraine, handicapped by a heavier rate of exchange, is asking slightly higher prices. Prices quoted (in Belgian currency): Blooms, about fr. 510 to 515 (\$26.60 to \$26.86); billets, fr. 540 to 545 (\$28.16 to \$28.42); largets, fr. 570 to 580 (\$29.73 to \$30.24). British are purchasers, but not above £5 10s. for blooms (fr. 473 French or \$24.67) and £5 12s. 6d. for billets and largets (fr. 484 French or \$25.24), which are acceptable prices.

**Rolled Products.**—Although in a better position than pig iron and semi-finished products, rolled products are none the less quiet. Their present base price varies from fr. 56.50 (1.32c. per lb.) for large shapes to fr. 60 (1.40c.) for smaller ones. But, in fact, many producers with order books already well provided for are asking a premium for speedy delivery. For small orders up to fr. 65 (1.51c.) is being asked for in the East of France. Sarre producers are quoting fr. 56 (1.30c.), f.o.t. at the frontier, with prepaid import dues.

Beams remain in small request; they are quoted

at about fr. 53 (1.23c.) in Lorraine, fr. 55 to 56 (1.28c. to 1.30c.) in the East, fr. 57 to 58 (1.33c. to 1.35c.) in the North. For export, on the Antwerp market, Belgians and Luxemburgers are quoting average prices of fr. 575 (1.34c.) for beams and fr. 590 (1.37c.) for bars. Lorraine is able to offer the same prices for beams, but not for bars. Prices quoted in sterling are £6 2s. 6d. (fr. 527.25 or 1.23c.) for beams and £6 5s. (fr. 537.50 or 1.25c.) for bars.

**Sheets.**—The activity in all branches of this section is being regularly kept up, and a delay of delivery shorter than three months is not apparently obtainable for the present. Prices quoted in Lorraine are:

Large plates .....	fr. 70	(1.63c. per lb.)
Sheets, 5 mm. (No. 6½ gage) and over.....	75	(1.75c. per lb.)
Medium sheets .....	85 to 90	(1.98c. to 2.10c.)
Light sheets .....	105	(2.45c. per lb.)

**In the Ardennes district:**

Heavy sheets, fr. 75 to 77 (1.75c. to 1.79c.) and even fr. 80 (1.86c.) for small orders.  
Medium sheets: Many works do not accept any more orders.  
Light sheets, fr. 109 (2.54c.)

In the other producing centers, light sheets are quoted as follows:

North .....	fr. 110	(2.56c.)
Paris area .....	113	(2.63c.)
West .....	115 to 116	(2.68c. to 2.70c.)

For export, Luxemburgers are quoting £7 10s. (fr. 649 French or 1.51c. per lb.) for heavy sheets and £7 12s. 6d. to £7 13s. 6d. for assorted sheets. Approximate prices quoted by Belgians for basic steel:

5 mm. and over (No. 6½ gage) .....	fr. 720 to 730	(1.68c. to 1.70c.)
3 mm. (No. 11½ gage) .....	775 to 800	(1.80c. to 1.86c.)
2 mm. (No. 14 gage) .....	825 to 835	(1.92c. to 1.94c.)
1.5 to 1 mm. (No. 16½ to No. 19½ gage) .....	900 to 925	(2.10c. to 2.15c.)
1 mm. .....	1,000 to 1,050	(2.33c. to 2.45c.)
0.5 mm. (No. 25½ gage) .....	1,200 to 1,300	(2.79c. to 3.03c.)

**Foundry.**—The market for foundry products is less active. However, the occupation remains normal enough for pattern foundry; the competition is keen and prices vary among the different producers. The production of malleable iron is increasing, with responsive demand. In steel castings situation is rather satisfactory.

### Luxemburg Production in June

LUXEMBURG, July 23.—Iron and steel production in June included:

**Pig Iron:** 175,039 metric tons, including 167,782 tons basic iron, 7032 tons cast iron and 225 tons forge iron.

**Raw Steel:** 143,573 metric tons, including 142,178 tons basic steel, 889 tons open-hearth steel, 525 tons electric steel.

Number of furnaces in blast on June 30 was 36, as follows:

**Arbed:** Esch, 6 out of 6; Dudelange, 6 out of 6; Dommeldange, 2 out of 3.

**Terres Rouges:** Belval, 6 out of 6. Esch is idle.

**Hadir:** Differdange, 8 out of 10. Rumelange is idle.

**Rodange:** 5 out of 5.

**Steinfurt:** 3 out of 3.

### French Imports and Exports

During the first five months of 1924 and 1923 the figures of imports and exports included:

**Pig Iron:** Imports, 20,304 tons in 1924, as against 31,688 tons in 1923. Exports, 338,583 tons in 1924 and 236,204 tons in 1923.

**Ferroalloys:** Imports, 3910 tons in 1924, as against 2961 tons in 1923. Exports, 9296 tons in 1924 and 8520 tons in 1923.

**Iron and Steel Products:** Imports, 302,515 tons in 1924, as against 192,800 tons in 1923. Exports, 1,106,517 tons in 1924 and 698,073 tons in 1923.

In an accident at one of the South Chicago blast furnaces of the Illinois Steel Co. on Aug. 4, a workman was killed and another was injured and the stack was seriously damaged. It had been relined and was being dried out.

### Price Concessions at Youngstown

YOUNGSTOWN, Aug. 12.—Market developments indicate that steel makers are securing business in some products at the expense of price lists. Several of the larger interests have indicated their displeasure with respect to this situation, believing that finished steel prices are dropping too low.

Steel plates, for instance, are not quotable above 2c. per lb., in comparison with a recent 2.15c. quotation. In fact, plate tonnages have recently moved as low as 1.85c. and 1.90c. Six months ago, the nominal steel plate market was 2.50c.

Full finished sheets have also felt the effect of competition for business lately. Certain of the independent makers are endeavoring to hold the price on No. 22 gage auto body stock at 5c., though producers in competitive territory have gone below this figure in order to obtain attractive tonnages.

More strength is being shown in hot-rolled strips and in merchant bars. The latter are quotable at 2.15c., and are in fairly firm demand. Concessions of \$2 per ton are being offered by certain producing interests.

Hot-rolled flats range from 2.50c. to 2.75c., depending upon the nature of the specifications. The market average is 2.60c.

Following a recent upturn in demand, the tin plate market has again subsided. Plate from stock is quotable down to \$5.15 per base box, but production plate holds at \$5.50, with preferential prices for large consumers.

### Improvements at Youngstown

YOUNGSTOWN, Aug. 11.—Considerable repair work is under way, bringing producing properties to a higher degree of efficiency. The Carnegie Steel Co. is rebuilding a blast furnace in its Ohio Works group and is overhauling much of its rolling mill equipment in this plant. The Republic Iron & Steel Co. is overhauling its Bessemer plant, installing new machinery and is building an additional butt-weld tube mill. The Youngstown Sheet & Tube Co. is rebuilding and enlarging a blast furnace in its East Youngstown group and is doing a large amount of miscellaneous repair work, for which appropriations were made to the amount of several million dollars.

The Sharon Steel Hoop Co. has been engaged in repair work at both its Sharon and Youngstown plants. The A. M. Byers Co. is rebuilding its blast furnace at Girard. Both the Thomas Sheet Steel Co. and the Waddell Steel Co. are modernizing their plants at Niles.

It is considered likely that never at any one time was so much repair and overhauling work going on in the Youngstown district. Mill managers say they are placing their plants in readiness for continued production on an efficient basis, when buying revives in a sustained way.

A book paper machine, designed to produce book and magazine papers 200 in. wide at the rate of 500 ft. per minute, will be installed at Covington, W. Va., in a building specially constructed for the purpose. It will be built for the West Virginia Pulp & Paper Co. by Rice, Barton & Fales, Inc., Worcester, Mass., maker of paper machinery. The machine will weigh 1000 tons, and will be 250 ft. long, 28 ft. wide on the ground and will have a maximum height of 15 ft.

Further increases in foreign sales of American industrial machinery were registered in Spain during the past year, when United States exports to that country jumped from \$1,370,868 in 1922 to \$1,839,934 in 1923, or an increase of 34 per cent, according to the Industrial Machinery Division of the Department of Commerce. Metal working machinery increased from \$228,815 in 1922 to \$280,350 in 1923, and miscellaneous machinery from \$573,776 to \$773,519.

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ESTABLISHED 1855

# THE IRON AGE

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## The Value of Steel Scrap

RECENT developments in the very complicated matter of steel scrap for open-hearth steel making have been interesting. Unlike the ordinary market commodity, scrap does not have a cost of production. The value of heavy melting steel scrap is simply what one can get for it. The consumers compete to get scrap and producers and dealers compete to dispose of it.

There have been, of course, sharp fluctuations in the market price of scrap. In periods of low prices the dealers would fill their yards, emptying them in periods of high prices. The rate of scrap production does not fluctuate so much as the rate of scrap consumption, and the price fluctuations are necessary to perform the function of equalizing.

What may be considered a new development has occurred. About May 1 heavy melting steel scrap reached a low point in the various consuming centers, and early in June it began to advance, being now an average of about \$2 a ton above its low point, without dealers having had opportunity to fill their yards. This seems to be due to both producers and consumers having more confidence in the return of values, so that the dealers had less opportunity than formerly to speculate.

Another new influence is the pains mills have been taking, and are taking, to make better use of scrap. By more careful selection, cutting and assorting they improve both the physical and the chemical condition of scrap, whereby charging boxes contain more weight, the scrap melts more readily in the furnace and with less loss and the analysis of the resulting steel is controlled within narrower limits. The mills that have thus taken pains find that scrap now has a measurably greater intrinsic worth to them than it had a few years ago. They can now afford to pay a higher price for it, relative to the cost of their pig iron, than formerly.

Whether heavy melting steel scrap will actually command in the open market prices more nearly in keeping with its yield in the open-hearth

furnace depends on the relation between supply and requirements. The matter of the varying outcome of scrap under changing conditions is quite intricate. It depends on several factors—the rate at which steel was being put into use at various times in the past, the character of the employment and the nature of current developments.

As to the first point, taking the view, which is only partly correct, that steel has a way of coming back as scrap after a certain interval, sometimes guessed at 15 to 20 years on an average, if the production of steel was much smaller then than the production now, the outcome will be light relative to requirements. If it was heavy, or if, for instance, the production of steel remains constant year after year, the outcome of scrap relative to requirements will be heavier.

As to the second point, if a year's output of steel goes largely into tin cans, wire, concrete reinforcing bars and the like, little will come back. If it goes into rails, machinery and particularly automobiles, it will come back in nearly full measure and soon. A mistake is sometimes made in assuming that fewer rails are coming back than formerly, since recently our domestic consumption has been about 2,000,000 tons a year, against about 3,000,000 tons, 1902 to 1913 inclusive. That larger tonnage was for laying new track, while the present tonnage is displacing old rails. However, rails are being made better now, and involve less replacement per ton mile of traffic.

As to the third point, a year in which there is much building and improving will bring out much scrap, while in a lean steel year we do little replacing.

## X-Rays in Industry

FRESH evidence is presented of the practicality of using the X-ray industrially outside the field of research. Its application to the analysis of coal as well as its adaptability to steel was discussed by two British scientists at separate meetings recently. Their opinions are given elsewhere in this issue.

As to coal analysis, the investigator points to

the possibility among other things of detecting the mineral constituents and states that there "may be a real place in industry for an X-ray unit of novel design." In respect to steel the conclusion is that certain improvements in X-ray apparatus will make possible a penetration of five to seven inches.

American experimenters have made rapid progress both in studying the constitution of matter by X-ray analysis and in the detection of defects in steel, particularly steel castings, with the result of actual change in foundry practice. The application to coal is a new departure which may turn out to have comparable value. There are those willing to prophesy that in the not distant future X-ray apparatus will be as common in its use in the metal industry as the microscope is now. So strong is this faith in one leader in research that he has decided to devote his future to the broad industrial phases of this fascinating field.

### Paying for Goods and Service

THE people of the country, in getting their living, require two principal things—goods and service. Wages, or income derived in other ways, are merely the means for arranging the division. Nobody can eat gold dollars or wear clothing made out of Federal Reserve notes. Such things are simply mediums of exchange, which enable people to get goods and service. The scale of living of the people as a whole, likewise as individuals, is determined by the quantity of goods and the amount of service they get. This is what economists mean when they talk about the real wage as distinct from the money wage, or nominal wage.

With respect to goods and the division thereof there is a fair understanding in general. No wage earner is under any illusion that a doubled number of Federal Reserve notes in his weekly pay envelope makes him any better off if all the things that he has to buy are doubled in cost. There is not, however, the same clear understanding with regard to service, which plays a highly important part in the national economy, even if it be subordinate to goods.

Service is a rather abstract and intangible expression. Most people use and enjoy service without thinking about it or appreciating it, especially in some of its more general forms. There is the clearest idea with respect to such things as domestic service in homes and the service of amusement in theaters; for in obtaining them everybody is constrained to pay for just what he gets, just as he is for food and clothing. Nobody yet has ventured to suggest that free amusement service for some people be provided at the direct expense of other people, although in fact exactly that thing is done through municipalities.

This brings us to the great form of service that is visualized economically least of all, viz., the public service. The latter ranges from the necessities, such as pure government, down to the means for enjoyment, such as public parks and band concerts in them. Another expression for all of this is taxation, which at present amounts to about one-eighth of all of our income.

It is not our purpose to deprecate in any way the major part of our public service. We must have good government, adequate policing, a sufficiency of educational means, etc., no matter what they cost. Our present purpose is merely to draw attention to the element of service in the cost of living and the fact that the division of expense on this account is of the same nature as the division of material goods.

It is human nature that every individual should seek to get for himself all that he can. We do not object, therefore, to any body of laborers, whether unionized or not, trying to benefit themselves; for that is what every one of us, high or low, does in his own affairs. Nor should we repudiate the natural individualism and inherent selfishness of man in trying to enhance his free service when he is unable to enhance his share in the division of goods. This, of course, is why there is such a popular outcry against railroad rates, why people are willing to vote bonuses to the soldiers and why they concentrate taxation upon a relatively small class of people.

The multitude is able to do all of these things, and would do them even more extensively if it were not for the restraint of the courts acting according to our fundamental constitutional charter. Demagogues indeed are seeking to nullify that last restraint by curtailing the authority of the Supreme Court, which means overriding the Constitution itself.

The mass of the people have never in the aggregate been deprived of what is due them by the well-to-do or any other class. On the contrary the improvement in the scale of living that men have enjoyed most remarkably during the last century has resulted from the exercise of the brain power of the few, the almost incredibly few, who have been the pilots of industry. Mere man, either in squads or masses, has played but relatively a small part in progress. Things have been done for him, not by him. He has indeed been rather obstructive, and often a nuisance. It is machine power, not man power, that creates our modern civilization.

Apart from the exhibition of natural individualism and selfishness, the economic and political unrest is founded on the thesis that the incompetent should be protected and their welfare guaranteed. Whether it be a socialistic movement, such as has been running through Europe, or a movement of discontent such as LaFollette is leading now in this country, it all boils down to just that. In truth, neither the people of Europe nor the wheat farmers of our Northwest, nor even the labor unions, here or abroad, should want to have any such ideas put into effect; for that would lead quickly to their own ruin. LaFollette tells the farmers that he would have railroad rates reduced, and he tells railroad labor that he would have their wages increased. We know that such things could not be done without ruining the railroads, and we know that both farmers and railroad workers would be ruined at the same time.

None of this is hypothesis or conjecture. It is theory, which means the expression of law. In science the test of a theory, which removes an expression from the class of hypothesis, is the deter-

mination that things actually operate and happen in conformity therewith. We had a good many preliminary tests of this theory, all pointing the same way, and then we had the great one in Russia. After five years of disregard of theory there, economic conditions have been reported recently to be at their worst, with another great famine impending.

The Russian doctrinaires were blind to the facts that machines, not men, are the modern producers and that the machines in system must be operated by the superior brain. They were blind to the principle of pilotage in industry and dismissed the pilots. Lenin himself learned that and recognized it, but too late. Fatuous socialists like Sidney Webb agree that our existing system accomplished all the great things up to a few years ago, but now they would have it changed. La-Follette would do the same thing.

Putting it rawly, these false leaders say that they will simply capture what scientists, inventors, engineers and managers have created, and turn it over to the crowd to run henceforth by itself. We know that the crowd can not create, and we know from experience in Russia that the crowd cannot run successfully what already has been created.

### The Number of Blast Furnaces

AN interesting point in the annual statistical report of the American Iron and Steel Institute, just issued, is a decrease of 17 in the number of blast furnaces considered potentially active—from 449 at the end of 1922 to 432 at the end of 1923. There was a loss of 13 coke furnaces and four charcoal furnaces. A table for the period 1912-1923 shows that the maximum number of furnaces after 1913 was 459, at the end of 1918.

It has been recognized for several decades that the number of blast furnaces tends to decrease, although tonnage production increases. In the annual reports of the American Iron and Steel Association, identified by the name of James M. Swank, there is to be found a continuous record of the number of blast furnaces since 1872, in which year there were 612. It is unlikely that before that time there were more. In the Swank record the maximum number of 716 was last found in 1881. The stacks were not only of small size, in general, but the greater number were charcoal, the totals at the end of 1881 being 219 coke furnaces, 223 anthracite and 274 charcoal furnaces.

From 1881 to date the general tendency has been for the number of blast furnaces to decrease. During each prolonged depression there was a shaking out, which appeared in the record after business had revived. Then a number of furnaces, which previously had had an excuse for their idleness, failed to resume and were accordingly dropped from the list.

Anthracite furnaces yielded to coke, partly by disappearing and partly by adopting coke. There are now no strictly anthracite furnaces, a few stacks occasionally using anthracite with coke.

Charcoal furnaces, of which there were 274 in 1881, merely disappeared, and the decrease has

been practically continuous, down to 45 in 1913 and 24 in 1923.

In the old days there were many more furnaces chronically idle than there have been in recent years. On Dec. 31, 1881, when the maximum number of furnaces was reported, only 455 were in blast out of the total of 716, no less than 261, or 36 per cent, being idle.

With 716 furnaces in 1881, the year's production of pig iron was 4,144,254 tons. With 432 furnaces in 1923 the year's production was 40,361,146 tons. Both years were record in point of tonnage. The output was multiplied practically ten-fold, while the number of stacks, whether active or idle, was reduced by two-fifths.

At various times the limit of individual blast furnace capacity was assumed to have been closely approached. Nowadays men are less likely to think of limits. The first really high furnaces came about half a century ago and it was some time before it was discovered that the upper portions of them were not functioning. About a quarter century later furnaces were given more air and did better. Lately, among other things, they have been given wider hearths.

### The Facts About Pig Iron Stocks

AN inquiry has come to THE IRON AGE concerning the correctness of the statement on page 222 of our issue of July 24, that "unsold stocks of pig iron in furnace yards have been reduced to a low point." The inquiry was prompted by a circular which emanated from the office of a Cleveland trade paper, and which places side by side with THE IRON AGE statement the American Pig Iron Association figure of 1,044,096 tons for *total merchant pig iron stocks* as reported at the end of June. There is the added Cleveland comment that "stocks of iron in the hands of merchant producers are the largest in years, if not the largest in history."

The difference between the statement quoted from THE IRON AGE and that from the Cleveland paper is due to the fact that they relate to different things. THE IRON AGE's reference was specifically to "unsold stocks," while the other reference was to total stocks of merchant pig iron, sold and unsold. The wording of this circular, with a purpose that is entirely evident, would lead the reader to believe that the statements referred to one and the same thing.

It is true, as stated by THE IRON AGE, that unsold stocks of pig iron in furnace yards have been reduced to a low point. Against the total of 1,044,096 tons on hand the reporting producers had unfilled orders on their books amounting to 762,000 tons, leaving *unsold stocks* of but 282,096 tons.

In the case of foundry iron, which is the chief and the significant product of the merchant furnaces, the unfilled orders amounting to 541,000 tons, or 28,000 tons more than the 513,000 tons reported on hand.

Both actually and relatively the unsold stocks in producers' hands have been reduced to a low point, as THE IRON AGE stated. Referring now to the American Iron and Steel Association's statistics, which for years were gathered in terms of unsold stocks (found by deducting unfilled orders from total stocks on hand), we find that on Jan. 1, 1897, the "unsold iron" amounted to 847,686 tons; on Jan. 1, 1898, to 874,978 tons; on Jan. 1, 1899, to 415,333 tons; on Jan. 1, 1901, to 446,020 tons, and on Jan. 1, 1904, to 598,489 tons.

Put the unsold stocks of 874,978 tons on Jan. 1, 1898, alongside the 282,096 tons at the end of June,

1924, and compare the two in the light of production in the year just preceding 1898 and production in the year just preceding 1924.

In 1897 the country made 9,652,680 tons of pig iron. In 1923 it made 40,361,146 tons, or more than four times as much as in 1897. Yet unsold stocks at the end of 1897 were more than three times as much as in June of this year.

In other words, unsold stocks of iron at the end of 1897 were twelve times as great, in proportion to output, as in June, 1924.

Yet the Cleveland circular, with all the emphasis of red ink—not a happy reminder in the present state of the pig iron industry—would have all who read it believe that the situation as to stocks of iron has

never been worse. Not a few men in the trade will recall that total merchant stocks of pig iron have run close to 1,500,000 tons in years when pig iron output was less than a third of today's. And THE IRON AGE's one-time monthly reports of "stocks sold and unsold," far from complete, as they were known to be, have shown stocks of 1,050,000 tons when the country's output was at only one-fourth the rate of the past 18 months.

It is hard to believe that the Cleveland statistical department of the American Pig Iron Association is not better informed than the writer of the Cleveland circular. But what is the information of a statistical department in the face of the exigencies of a subscription solicitor?

## CORRESPONDENCE

### Welding Heavy Plate Work

*To the Editor:*—In your editorial on "The Status of Welding" on July 31, you mentioned the fact that riveting is still relied on for heavy plate work, such as large storage tanks and boilers, due to the fact that the large sheets buckle in an unsightly manner when welded.

The difficulty in welding heavy plate up to now has been due to the inability to compensate for residual strains, which cause the buckling. However, by using proper arc welding methods this heavy plate can be welded at one-third the cost of riveting and a permanently tight job secured.

There are two methods of compensation for the residual strain which would otherwise be obtained in a weld. One is step-back welding and the other is by peening the deposited metal with an air tool. On large tanks made of  $\frac{1}{2}$ -in. or thinner material, the step-back welding will in 99 per cent of the cases take care of the matter of residual strain sufficiently well for all practical purposes. Step-back welding does not in any way decrease the speed at which the work may be done, since it is merely a matter of sequence of doing welding and has no connection with pounds of metal deposited per hour or the type of joint made.

#### Handling $\frac{1}{2}$ -in. and Thicker Plate

On plate  $\frac{1}{2}$ -in. thick, or thicker, however, there is sufficient stiffness to the plate section to make it advisable to relieve the residual strain to the maximum possible degree, and in this case the metal should be put in in layers and it should be peened with an air tool, using a roughing tool between layers. Failure to do this will give a weld which is 30 to 40 per cent less in tensile strength than would be estimated on the basis of the section of welded material in the joint.

The peening of the deposited metal is done immediately after it has been deposited. It is usually impossible to peen the metal while it is still hot enough to show color, but it is sufficient for practical purposes to peen it as each section of the metal as put on by the step-back method is completed.

The peening operation should not be carried on to the point at which the metal is badly upset and damaged. When the surface is fairly rough, it may be assumed that the peening operation is completed. The peening operation adds about 20 per cent to the cost of doing work as compared to doing it without the peening operation.

#### Alloy Steel Welding Rod Not Necessary

It is not necessary to use an alloy steel welding rod in order to obtain the necessary strength in the weld. The limiting factor in the strength of the weld is the metal of the plate which has been melted and cooled without appreciable change in the chemical composition. This metal which has received this treatment has been changed from rolled steel to cast steel. Its tensile strength has not been affected but its ductility

has. The weak point therefore of a welded joint is not in the weld itself but in the material adjacent to the weld which has been melted and changed from rolled steel to cast steel.

A properly made weld with low carbon bare steel wire in, say,  $\frac{1}{8}$ -in. plate, reinforced 3/32 in. on each side, will be stronger than the original plate and the job will break outside of the weld on a pulling machine. There is therefore no advantage in using a higher tensile strength alloy rod.

There is also the additional difficulty in the use of an alloy wire in that the high carbon steel or alloy steel hardens appreciably in the welding operation and the tendency is to get a brittle weld which, while its tensile strength might be found good, is brittle and practically worthless for commercial purposes.

One of the things which has been hindering the growth of welding has been the incorrect method of its use. This incorrect method of welding has resulted in failures in some cases and for that reason has given welding a bad name.

Our company, therefore, is devoting considerable time to the investigation of proper methods of doing welding and has completed a survey of ten major industries and has accumulated methods and specifications which it is distributing to the field for the promotion of better welding.

H. P. EGAN.

Lincoln Electric Co.

Cleveland, Aug. 8.

Comparative figures for the number of men killed in coal mining accidents for the United States, Great Britain, France, Belgium and Prussia have been published by the Labor Bureau of the League of Nations, covering the 12 years 1911 to 1922 inclusive. In relation to the tonnage of coal mined, the United States shows up best of all those being compared, the average of the 12 figures being 4.27 men per million tons of coal mined, compared with 4.66 men in Great Britain, 5.95 in France, 6.65 in Belgium and 9.85 in Prussia.

## COMING MEETINGS

### August

Young Men's Christian Association. Aug. 28 to 31. Annual industrial conference on human relations, Silver Bay on Lake George, N. Y. J. Parke Channing, Miami Copper Co., 61 Broadway, New York, chairman.

### September

Iron and Steel Institute. Sept. 4 and 5. Fall meeting, British Empire exhibition at Wembley, England. George C. Lloyd, 23 Victoria Street, London, S. W. 1, England.

National Sheet Metalware Association. Sept. 9 and 10. Annual meeting, Hotel Statler, Buffalo, N. Y.

American Society for Steel Treating. Sept. 22 to 24. Annual convention and exhibition. Headquarters, Copley-Plaza Hotel; exhibition, Commonwealth Pier, Boston. W. H. Eisenmann, 4600 Prospect Avenue, Cleveland, secretary.

American Mining Congress. Sept. 29 to Oct. 4. Annual convention, Sacramento, Cal. J. F. Callbreath, 814 Munsey Building, Washington, secretary.

# Iron and Steel Markets

## NEARING 50 PER CENT

### Expectation of Further Gradual Improvement in Steel

#### Some Releases of Railroad Orders—Pig Iron Producers Quote Higher

The course of the steel trade still indicates a measurable increase from week to week in output of rolled products. Thus, while the steel ingot statistics for July show an average of 41.5 per cent of capacity employed, reckoning the total at 54,000,000 tons a year, the industry as a whole is probably running this week at nearer 50 than 45 per cent.

Expectations of further improvement at the mills, and they are general, are based rather upon a rebound from the inadequate replacement buying of June and July than on any new development in important consuming lines.

The most likely exception is in railroad steel, in view of recent releases of rail tonnages on which rollings had been held up, and the probability of other like action both by Eastern roads and by several which had placed orders with Chicago district mills. At present low prices for plates there are intimations also that freight car contracts could be put through at substantial concessions from the car works bids of six months ago.

The week has brought no marked change in prices, though buyers are not persuaded that the low point has been reached. Some improvement in wire demand has made \$2.80 for wire nails and 2.55c. for plain wire more common, or \$1 a ton below recent prices.

As of Aug. 7 the American Sheet & Tin Plate Co. met the 4.75c. price on automobile body sheets which competition had developed 10 days before. The company also lowered its price on long terne plates (for motor car gasoline tanks) from 5.30c. to 5c. base, though in other quarters 4.95c. has appeared. As a whole the sheet industry is running at about 50 per cent of full.

Bars have held their market position better than plates and shapes. In plates the number of mills having that as their one product has made a highly competitive situation. Bars are produced by the largest companies and these give ground slowly.

Although Detroit automobile companies have been buying some steel recently, the promised in-

crease over the July rate of car production has not materialized.

Including 10,300 tons for Philadelphia subway work, awards of structural steel work called for 27,000 tons, practically the average of the past ten weeks. The volume of new work appears to be falling off.

While actual advances in pig iron are few, indications of greater resistance by sellers are more definite. Two steel companies that are active sellers of foundry iron are quoting 50c. higher and are less eager for business. Some Chicago prices are up 50c. Sales include about 25,000 tons of basic at Philadelphia and 25,000 tons of foundry grades at Cleveland. At Pittsburgh, where a sanitary company is about to buy for fourth quarter about 20,000 tons, sentiment is more cheerful. In the South, there is better support for the \$18 price, but \$17.50 has not disappeared.

At Pittsburgh a stronger tendency has developed in primary materials. Coke producers are more inclined to sell their coal than to convert it into coke on less than a \$3.25 market.

THE IRON AGE composite price for finished steel has fallen to 2.517c. per lb. from 2.524c. last week. This is the lowest figure since January, 1923.

The pig iron composite price has advanced to \$19.38, from \$19.29 last week, which was the lowest figure in 28 months.

## Pittsburgh

### Stronger Position of Primary Products—Wire Prices Decline

PITTSBURGH, Aug. 12.—The chief development of the week is an increase in interest and a stronger tendency in the primary materials. Producers of coke have concluded that it would be more profitable to market raw coal, even at today's prices, than to convert it into coke at a price less than \$3.25 per net ton at ovens, which represents a stronger price idea than they have recently had and is partly founded on the fact that increased industrial activity is reducing coal stock piles and bringing nearer fresh demands.

At least two producers of foundry iron in this district have announced an advance of 50c. a ton for fourth quarter tonnages, and as a result of increased inquiry producers generally are firmer on prices than they were a short time ago.

The scrap market reflects more interest on the part of melters than was the case recently, and dealers, confident of increased demands upon them later in the year, are paying high prices for railroad offerings.

The report about steel business still is one of an increase in a number of orders, but with prices still

## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Aug. 12, 1924	Aug. 5, 1924	July 8, 1924	Aug. 14, 1923
No. 2X, Philadelphia.....	\$21.26	\$21.26	\$21.26	\$25.76
No. 2, Valley Furnace.....	19.00	19.00	19.00	25.00
No. 2, Southern, Cin'tit.....	21.55	21.55	22.05	27.55
No. 2, Birmingham, Ala.†... 17.50	17.50	18.00	18.00	24.00
No. 2 foundry, Chicago*... 20.50	20.00	19.50	27.00	
Basic, del'd, eastern Pa....	20.00	20.00	20.00	25.00
Basic, Valley furnace.....	19.00	19.00	19.00	24.50
Valley Bessemer del'd P'gh 21.76	21.76	22.26	28.26	
Malleable, Chicago*..... 20.50	20.00	19.50	27.00	
Malleable, Valley.....	19.00	19.00	19.00	24.50
Gray forge, Pittsburgh....	20.26	20.26	20.26	25.76
L. S. charcoal, Chicago....	29.04	29.04	29.04	32.15
Ferromanganese, furnace. 99.00	99.00	107.50	117.50	

Rails, Billets, Etc., Per Gross Ton:	Aug. 12, 1924	Aug. 5, 1924	July 8, 1924	Aug. 14, 1923
O.-h. rails, heavy, at mill. \$43.00	\$43.00	\$43.00	\$43.00	\$43.00
Bess. billets, Pittsburgh... 38.00	38.00	38.00	38.00	42.50
O.-h. billets, Pittsburgh... 38.00	38.00	38.00	38.00	42.50
O.-h. sheet bars, P'gh..... 38.00	38.00	38.00	40.00	42.50
Forging billets, base, P'gh 43.00	43.00	43.00	43.00	47.50
O.-h. billets, Phila..... 43.17	43.17	43.17	47.67	
Wire rods, Pittsburgh.... 46.00	48.00	48.00	51.00	
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb... 2.00	2.00	2.00	2.15	2.40
Light rails at mill..... 1.85	1.85	1.85	1.90	2.25

### Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	2.42	2.42	2.42	2.67
Iron bars, Chicago.....	2.20	2.20	2.20	2.40
Steel bars, Pittsburgh....	2.15	2.15	2.15	2.40
Steel bars, Chicago.....	2.15	2.15	2.20	2.60
Steel bars, New York....	2.49	2.49	2.49	2.74
Tank plates, Pittsburgh...	2.00	2.00	2.15	2.50
Tank plates, Chicago.....	2.25	2.25	2.25	2.80
Tank plates, New York....	2.09	2.09	2.19	2.84
Beams, Pittsburgh.....	2.00	2.00	2.15	2.50
Beams, Chicago.....	2.25	2.25	2.25	2.70
Beams, New York.....	2.34	2.34	2.34	2.84
Steel hoops, Pittsburgh.. 2.60	2.60	2.60	2.75	3.15

\*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market report on other pages.

Sheets, Nails and Wire,	Aug. 12, 1924	Aug. 5, 1924	July 8, 1924	Aug. 14, 1923
Per Lb. to Large Buyers: Cents	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh 3.40	3.40	3.40	3.50	3.75
Sheets, galv., No. 28, P'gh 4.50	4.50	4.50	4.60	5.00
Sheets, blue an'd, 9 & 10 2.60	2.60	2.60	2.75	3.00
Wire nails, Pittsburgh.... 2.80	2.85	2.90	3.00	
Plain wire, Pittsburgh.... 2.55	2.60	2.65	2.75	
Barbed wire, galv., P'gh... 3.50	3.55	3.70	3.80	
Tin plate, 100-lb. box, P'gh \$5.50	\$5.50	\$5.50	\$5.50	\$5.50

### Old Material, Per Gross Ton:

Carwheels, Chicago.....	\$17.00	\$17.00	\$16.50	\$19.50
Carwheels, Philadelphia.. 17.50	17.50	17.00	20.00	
Heavy steel scrap, P'gh... 17.50	17.50	17.00	18.00	
Heavy steel scrap, Phila... 17.00	16.00	15.50	16.00	
Heavy steel scrap, Ch'go... 15.50	15.50	14.50	16.00	
No. 1 cast, Pittsburgh.... 18.00	18.00	17.50	21.50	
No. 1 cast, Philadelphia.. 17.00	17.00	18.00	20.00	
No. 1 cast, Ch'go (net ton) 17.50	17.50	16.75	17.50	
No. 1 RR. wro't, Phila.... 18.00	18.00	17.50	18.00	
No. 1 RR. w't, Ch'go (net) 13.75	13.50	12.50	14.00	

### Coke, Connellsville,

Per Net Ton at Oven:

Furnace coke, prompt....	\$3.00	\$3.00	\$3.00	\$4.50
Foundry coke, prompt....	4.00	4.00	4.25	5.25

### Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York.... 13.75 1/2	13.25	12.50	14.50	
Electrolytic copper, refinery 13.37 1/2	13.12 1/2	12.00	13.87 1/2	
Zinc, St. Louis.....	6.17 1/2	6.17 1/2	5.77 1/2	6.25
Zinc, New York.....	6.52 1/2	6.52 1/2	6.12 1/2	6.60
Lead, St. Louis.....	7.00	7.37 1/2	6.65	6.35
Lead, New York.....	7.87 1/2	7.65	7.00	6.70
Tin (Straits), New York.. 51.62 1/2	51.75	43.62 1/2	38.50	
Antimony (Asiatic), N. Y. 9.12 1/2	9.00	8.30	7.87 1/2	

## THE IRON AGE Composite Prices

Aug. 12, 1924, Finished Steel, 2.517c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.	{	Aug. 5, 1924, 2.524c.
		July 15, 1924, 2.589c.
		Aug. 14, 1923, 2.775c.
		10-year pre-war average, 1.689c.

Aug. 12, 1924, Pig Iron, \$19.38 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.	{	Aug. 5, 1924, \$19.29
		July 15, 1924, 19.29
		Aug. 14, 1923, 25.04
		10-year pre-war average, 15.72

1924 to Date	Low	High	1923	Low	High
2.789c., Jan. 15	2.517c., Aug. 12		2.524c., April 24	2.446c., Jan. 2	
\$22.88, Feb. 26	\$19.29, July 8		\$30.88, March 20	\$20.77, Nov. 20	
			Finished Steel		
			Pig Iron		

favorable to the buyers on most products, the composite price of steel being up considerably more as compared with the ten-year pre-war average than the composite pig iron price, it would seem that the market was moving toward a more normal relationship between the two lines.

Steel prices still are easy because there are more sellers than buyers. The plate market is really best described as weak. Wire products are down \$1 a ton from recent levels in most parts of the country and wire rods now are generally quotable at \$46, base, as compared with \$48 recently named by most producers. The American Sheet & Tin Plate Co., in keeping with the Steel Corporation policy of meeting competition, reduced its price of automobile sheets as of Aug. 7 to 4.75c., base,

(No. 22 gage). Some irregularity still is noticed in the commoner finishes of sheets, although mills representing the larger part of the production are adhering to 3.50c., base, for black, 4.60c., base, for galvanized, and 2.70c., base, for blue annealed. Steel bar prices are holding with considerable tenacity and signs of weakness are lacking in pipe prices or those for tin plate.

Sentiment still inclines toward cheerfulness. Orders run chiefly to small lots, but it is encouraging to manufacturers to note that in many cases buyers give evidence of having waited too long in their insistence upon early deliveries. Mill order books are not filling up rapidly enough to enable the manufacturers to make a stand on prices and it is probably because buyers are doubtful that prices are at a bottom that they are not more disposed to anticipate their requirements.

The tendency of the steel works and mill operations is upward, but it is doubtful if the general average of active ingot capacity in this and nearby districts is as high as 50 per cent.

**Pig Iron.**—There has been a decided quickening of interest on the part of melters in the market and the signs point to increased sales in the near future. A large sanitary ware manufacturer is negotiating for his fourth quarter requirements. These may run as high as 20,000 tons of foundry iron. A maker of wrought iron pipe is seeking 2500 tons of gray forge iron for delivery at the rate of 100 tons a day, beginning Aug. 15. A West Virginia sheet maker recently inquired for 12,000 tons of basic iron for delivery at the rate of 3000 tons a month beginning Sept. 1. Evidently this interest did not find the market as favorable as it expected because it is understood to have since decided to buy its requirements each month. This decision is agreeable to producers because they prefer not to be obligated too far ahead at today's prices. This probably explains why the Bethlehem Steel Co. and the McKinney Steel Co. have announced an advance of 50c. a ton on foundry grades for last quarter shipment. The sanitary ware manufacturer in the market for last quarter tonnages, on account of the size of the business which is likely to be taken as a backlog, probably will be able to secure the iron at \$19 furnace for No. 2. That grade for early delivery still is available at \$19, furnace, in the Valley or western Pennsylvania. Malleable and basic grades also are quotable at \$19, furnace. Bessemer iron holds at \$20, but sales are few and in all cases in small lots. Middle interests are active in seeking tonnages of foundry iron and some of the small foundries, although fairly well supplied with iron, are disposed to lay in additional supplies in the belief that prices are not going to be lower. The future of the market seems to depend on how well the steel companies become filled up on steel business, since the smallness of their order books has been the principal reason why they have been factors in the pig iron market.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic .....	\$19.00
Bessemer .....	20.00
Gray forge .....	\$18.50 to 19.00
No. 2 foundry .....	19.00 to 19.50
No. 3 foundry .....	18.50 to 19.00
Malleable .....	19.00
Low phosphorus, copper free....	26.00 to 27.00

**Ferroalloys.**—No further change is noted in ferromanganese prices. The recent reductions have failed to stimulate demand and there being no pressure to force sales, the market is holding as last quoted. There are intimations of withdrawals of present prices, but definite action in that direction is not yet noted. Larger producers of 50 per cent ferrosilicon, those representing the larger part of the production, are holding to \$74 and \$75, delivered east of the Mississippi River, but one is going as low as \$70 to secure spot orders and such business as is being done locally is at or near that price. Spiegeleisen is readily obtainable in carload lots at \$34, furnace, for 20 per cent material, while in large lots \$33 is the prevailing price. A carload of 14 to 16 per cent electric furnace Bessemer ferrosilicon was sold recently to a local user at \$36, furnace. General business still is very quiet. Prices are given on page 415.

**Semi-Finished Steel.**—While some makers of wire rods still are talking \$48, base, and claim to be getting orders at that figure, there is a good deal more business passing at \$46, base; that price is much more representative of today's market than the higher figure. Buyers claim to have been offered tonnages at \$45. With wire products showing a further recession of \$1 a ton, it has not been possible to hold up rod prices. It is difficult to uncover positive evidence of lower prices than \$38 for billets, slabs and sheet bars, because producers do not want to have to revise contract prices and buyers, if they are getting more favorable terms, are silent about them in the fear of the effect upon finished steel prices. But there are no large requirements and the price of \$38 lacks the test of demand. It is believed this price would be shaded \$1 to \$3 a ton if a worth while order was presented. The common quotation on forg-

ing billets is \$43, but here, too, there are no demands of a size to tempt the naming of lower figures. Skelp is dull and easy. Prices are given on page 415.

**Wire Products.**—While the common report is that business still is improving, it is evident that the gain is at the expense of prices, since \$2.80, base, per keg on nails and \$2.55, base, per 100 lb. on plain wire, with corresponding concessions on other products, have become common all along the Atlantic seaboard and these quotations are being more frequently encountered than was the case recently in nearby districts. Former quotations in the past few days have been hard to obtain in Pittsburgh, and so far as actual sales are concerned may be regarded as having disappeared. Prices are given on page 414.

**Steel Rails.**—Demands for light rails still are few and small and prices generally favor buyers. Prices are given on page 415.

**Tubular Goods.**—Steel pipe mills are having a relatively good operation, but it is explained by recent line pipe orders than because of a good demand for either standard pipe or oil country goods. Demand for the latter kinds of pipe is described as increasing, but there is no evidence that distributors are anticipating their requirements. Prices of both steel and wrought iron pipe are well sustained, but on line pipe concessions are being made and boiler tube prices are weak, although demands show some increase. Bids on the 365 miles of 10-in. line pipe for the Andean National Corporation, for South America, close today and an award is looked for this week. Discounts are given on page 414.

**Sheets.**—Orders continue to gain and are well distributed among the different finishes and come from widely diversified sources of demand. Perhaps the most encouraging development to manufacturers is that large jobbers are buying for stock. It is figured that the warehouse interests would not be buyers if they expected lower prices. Prices below 3.50c., base, for black, 4.60c., base, for galvanized and 4.70c., base, for blue annealed have not disappeared, but it is claimed by those holding to those prices that lower prices are less frequently encountered. The American Sheet & Tin Plate Co., effective Aug. 7, met the 4.75c. price on automobile body sheets named about 10 days ago by independent producers. All makers now are quoting that price. The American Sheet & Tin Plate Co. has lowered its price on long ternes from 5.30c. to 5c. base, while leading independent makers have dropped to 4.95c. This product finds its principal use in gasoline tanks for automobiles. Based on the number of mills active, the sheet industry is about 60 per cent engaged, but few mills are being operated the full number of turns and production is probably not yet 50 per cent of capacity. Most manufacturers have stocks and very prompt deliveries are being made on new orders. These conditions encourage requirement buying and building up of backlogs is slow work. Prices are given on page 414.

**Tin Plate.**—There has been no improvement in the demand, since it is not yet certain that present supplies of packer can sizes will not be sufficient to meet the season's requirements and can makers are not buying something they are doubtful about needing. Mills have enough business to sustain operations of close to 50 per cent and the fact that prices are holding steadily in face of that fact and the weakness in steel is accounted for solely by the strength of the pig tin market.

**Cold-Finished Steel Bars and Shafting.**—Orders still are gaining with makers in this district, but no big tonnages are involved except in the case of the Ford Motor Co. This interest is said to have offered 2.75c., base, and the old card of extras, but it is believed that the concession on this business was confined to that price. Generally, there is good observance of the regular quotation of 2.80c., base. Ground shafting holds at 3.20c., base, f.o.b. mill, for lots of a carload or more.

**Track Supplies.**—Business locally is quiet and makers cannot get very far East or West with prices the same either way, which forces a rather big concession in prices to get into other territories. Tie plates no longer command more than \$50 per net ton in this market. Prices are given on page 414.

**Iron and Steel Bars.**—Makers are holding steel bars firmly at 2.15c., base, and showing no inclination to consider offers of less. Bar business is steady rather than active, but evidently all makers are getting a share and there is not as sharp competition for orders as there is in some other lines. Iron bars are slow and refined iron grade can be bought at 2.90c. base, or \$2 a ton below the recent quotation. Prices are given on page 414.

**Structural Material.**—More structural projects are coming to local shops than was true recently. This converts some protections into actual orders and with some buying of material for stock the mills have a better operation than recently. On round tonnages the market is 2c., base, for large structural beams, while small lots are being placed at from 2.05c. to 2.10c. and occasionally at 2.15c. Prices are given on page 414.

**Plates.**—This product is the weakest in price of any on the list. There are too many makers seeking a share of a moderate amount of business and small tonnages now can be placed at 2c., base. Formerly that price was made only on round lots. As high as 2.10c. still is quoted, but is increasingly difficult to obtain because of the competition for orders. The Chesapeake & Ohio inquiry for 1000 car bodies, involving about 12,000 tons of steel, mostly plates, has not yet been placed. Prices are given on page 414.

**Hot-Rolled Flats.**—Business is better with producers in this district. Orders and specifications so far this month are equal to those for the entire month of July with two makers. Prices still are rather poorly defined, but mills are making an effort to maintain 2.60c. for hoop sizes and gages, 2.50c. for bands, while strips take a range of from 2.40c. to 2.50c. On large lots the size of the tonnage and the attractiveness of the specification from a mill standpoint have much to do with the price. Prices are given on page 414.

**Cold-Rolled Strips.**—Makers now are quoting as their regular price 4.25c., base, Pittsburgh, and 4.50c., base, has disappeared even as a nominal quotation. Large lot business has been taken as low as 4c. Recent reduction in the price of automobile body sheets creates a problem for cold-rolled strip steel makers in the matter of fender stock, since a price of sheets for that use would be about 5.85c., as against 6.05c. to 6.10c. for cold-rolled strips.

**Bolts, Nuts and Rivets.**—Withdrawals of low quotations on bolts and nuts continue and the market now more nearly approaches stabilization than before in about a year. Several manufacturers have restored the old discount list, quoting large machine bolts at 60 and 20 off list, which figures out  $\frac{1}{2}$  of 1 per cent more than 65 and 10 per cent off list. Books for fourth quarter have not yet been opened, but an advance is being considered. The rivet market still is somewhat uneven. Prices and discounts are given on page 414.

**Coke and Coal.**—No particular change is noted in prices as compared with a week ago, except that on fourth quarter furnace coke contracts most producers now regard \$3.25 net ton at ovens as their minimum price. Spot tonnages of this grade still are fairly easily obtained at \$3 and occasionally for slightly less, but as the coal market gives signs of early improvement and coal at about \$1.75 a ton is more profitable than coke at \$3.25 a ton, there is a disposition to take a firmer stand on fourth quarter coke business. Spot foundry coke is still quotable at \$4 to \$4.50. The spot coal market ranges from \$1.50 to \$1.75 per net ton at mine for mine run steam grade, \$1.60 to \$1.75 for coking and \$1.85 to \$2 for gas coal. Slack coal is scarce because of light demands for lump coal and is firmer in price. Steam slack now commands \$1.20 to \$1.30 and gas slack from \$1.30 to \$1.40.

**Old Material.**—The market has stiffened rather sharply on blast furnace grades as a result of the purchase of about 3500 tons for Steubenville delivery. Other grades are holding at about recent levels. On pickup tonnages of heavy melting steel, the market is quotable from \$17.50 to \$18, sale of 1000 tons for Midland, Pa., delivery being noted at the lower figure.

Generally, consumers still are indifferent about purchases, although possibly not as much so as recently, since there is an increase in steel orders, if not in the volume. Dealers who have yard stocks are not disposed to let them go at present prices and to sustain their position are buying all the good scrap that is coming out. This explains the high prices received for Pennsylvania Railroad scrap awarded last week. Steel in that list sold from \$18.20 to \$18.40 per gross ton, the specialties about \$20.75, No. 1 rails \$18.75, long rails \$17.75 and the uncut material \$16.25. Norfolk & Western Railway is receiving bids until noon, Aug. 13, on 4073 gross tons of old material. Sales of low phosphorus billet and bloom crops are noted up to \$22.50.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel.....	\$17.50 to \$18.00
No. 1 cast, cupola size.....	18.00 to 18.50
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa. ....	18.50 to 19.50
Compressed sheet steel.....	18.00 to 18.50
Bundled sheets, sides and ends..	14.50 to 15.00
Railroad knuckles and couplers..	20.00 to 20.50
Railroad coil and leaf springs...	20.00 to 20.50
Low phosphorus blooms and billet ends .....	22.00 to 22.50
Low phosphorus plate and other material .....	21.00 to 21.50
Railroad malleable .....	16.00 to 16.50
Steel car axles.....	20.00 to 20.50
Cast iron wheels.....	16.50 to 17.00
Rolled steel wheels.....	20.00 to 20.50
Machine shop turnings.....	14.00 to 14.50
Sheet bar crops.....	18.00 to 18.50
Heavy steel axle turnings.....	15.00 to 15.50
Short shoveling turnings.....	15.00 to 15.25
Heavy breakable cast.....	15.00 to 15.50
Stove plate .....	13.50 to 14.00
Cast iron borings.....	15.00 to 15.25
No. 1 railroad wrought.....	15.00 to 15.50
No. 2 railroad wrought.....	18.00 to 18.25

### Bonus Plan of United Engineering & Foundry Co. in Operation

President F. C. Biggert, Jr., of the United Engineering & Foundry Co., Pittsburgh, states that the company paid \$170,000 for service, attendance and vacation bonuses during the first year's operation of the bonus plan, recently completed. This equals  $8\frac{1}{2}$  per cent of the yearly payroll of approximately \$2,000,000. "The bonus plan has stimulated cooperation throughout the organization," states Mr. Biggert. "Better costs are coming in, which means that product is being put out with less hours of work and producing product with less hours is the object of the bonus."

Mr. Biggert points out that the \$170,000 paid in bonuses represents an amount distributed over and above the going wages of the districts in which the company's shops are located, but this cost has been offset by the increased productive capacity which has been created.

The Interstate Commerce Commission in a decision held not justified proposed increased proportional rates on iron and steel articles and canned goods in carloads from Gulf ports to points on and north of the Ohio River applicable to traffic from the Pacific Coast through the Panama Canal. For all practical purposes the case is of no interest to the iron and steel industry except for the principle involved, because there is no iron and steel movement of the kind mentioned.

The British Empire Steel Corporation is prepared to continue working its iron mines in Newfoundland throughout the remainder of the year on the present wage basis of the 1800 workmen, it has been officially announced. A demand for higher wages, it was stated, would result in suspension of work, since the margin of profit on the 750,000 tons of ore being shipped to Germany this year is too slight to permit an increase in wages.

## Chicago

### Buying of Steel Not So Active, but Prospects Encouraging—Pig Iron Advances

CHICAGO, Aug. 12.—While inquiries and awards in the steel market the past week showed a decline from the preceding week, the trade is cheerful over the outlook and expresses the belief that the recent improvement will continue. The general policy of consumers is to close for immediate needs only. At the same time, the cautious attitude they show is considered to be a forerunner to healthy expansion of purchases through a gradual rather than a sudden demand.

It is also accepted as a good sign that inquiries and purchases come from miscellaneous sources. Considerable railroad and fabricating business is pending while demand for steel bars and other requirements for agricultural implement makers still shows improvement.

The largest steel business done in this district the past week involved about 30,000 tons for cars recently bought by the Missouri Pacific Railroad. Plates, however, continue to sag in price and the trend has been more toward a level of 2.15c., Chicago, on attractive tonnage, although the higher figure of 2.25c. still is obtained on small tonnages.

Structural business in this district which is expected to be placed soon involves approximately 18,000 tons. While a little stronger than plates, the market for shapes also is rather weak.

The pig iron market has stiffened. Northern grades have been advanced 50c. a ton and a limited amount of business has been done at the higher quotation. Some good sized business for delivery over the remainder of the year is in the market.

The market for old material also has become stronger in a number of grades, which have advanced in price, but sales are small. Mills apparently are showing but little interest in this market.

Producers expect the higher prices, where they have been established, to remain, and that still further increases may be expected when greater operations are necessitated by heavier orders. As it is, there remains a wide gap between new business and capacity operations.

Production remains unchanged in this district both as to pig iron and steel. Ingot output still ranges between 40 and 42 per cent while 12 of 30 blast furnaces are active.

**Pig Iron.**—An advance of 50c. a ton has been made in the price of local iron. This establishes a base of \$20.50 a ton, furnace. The firmer tone of the market which was marked last week indicated that a higher level was about to be named. The new schedule went into effect this week. It applies to deliveries over the remainder of the year. While inquiries for early 1925 shipment have come out in small volume, furnaces are unwilling to quote on that delivery. Business done at the increased price has been comparatively light, but some good sized tonnages are in the market and furnaces expect that by reason of the stronger tone this tonnage will be placed soon. Practically all of the business has been done in foundry grades, though a small amount of basic has been sold. The market for Southern pig iron remains unchanged with the base grade quoted at \$18, furnace. Lots of 50 to 500 tons of Southern iron continue to come to this district, most of it by barge and rail. On this kind of shipment the delivered price of Southern iron in Chicago is \$22.18. Melters of malleable iron have shown a little more interest in the market and have closed the past week for small tonnages, most of it going at the old base of \$20. Other melters also have been somewhat more active. An inquiry is out for 3000 tons of basic iron. It comes from a large consumer with plants in other districts and the tonnage is wanted for fourth quarter delivery to an

Eastern plant. The heaviest inquiry, involving from 8000 to 12,000 tons of foundry iron, comes from the Kohler Co., Sheboygan, Wis., manufacturer of sanitary ware, shipment to be made over the remainder of the year. This interest also is inquiring for 1000 tons of 10 to 11 per cent silvery iron, whose quotation is unchanged for the same delivery. Other inquiries include 1000 tons of No. 1 foundry, put out from this district for delivery over the remainder of the year; 500 tons of No. 2 foundry, also for the remainder of the year for delivery in this district and several hundred tons of charcoal iron for Chicago district delivery. The Wolff Mfg. Co., Chicago, closed a few days ago for 2500 tons of foundry iron for delivery over the remainder of the year at \$20, base. The prices of charcoal and low phosphorus iron remain unchanged with light demand.

Quotations on Northern foundry, high phosphorus, malleable and basic iron are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25 .....	\$20.50
Northern No. 1 foundry, sil. 2.25 to 2.75 .....	21.00
Malleable, not over 2.25 sil. ....	20.50
Basic .....	20.50
High phosphorus .....	20.50
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago ..	29.04
Southern No. 2 (barge and rail)	22.18
Southern No. 2, sil. 1.75 to 2.25 ..	24.01
Low phos., sil. 1 to 2 per cent, copper free .....	32.29
Silvery, sil. 8 per cent. ....	\$34.29 to 35.29
Electric ferrosilicon, 14 to 16 per cent .....	43.42

**Ferromanganese.**—The market for ferroalloys is extremely quiet. Domestic ferromanganese still is quoted at \$99, seaboard, and foreign alloy remains at \$100, but it is likely that the foreign material would be reduced to the domestic level if active inquiry developed.

We quote 80 per cent ferromanganese, \$106.56, delivered; 50 per cent ferrosilicon, \$75, delivered; spiegeleisen, 18 to 22 per cent, \$39.56, delivered.

**Plates.**—Calling for approximately 30,000 tons, steel for the 2950 cars purchased by the Missouri Pacific Railroad has been placed with mills in this district. Of this amount about 20,000 tons went to one producer. The market for plates, however, continues weak and while it still takes a spread of 2.15c. to 2.25c., Chicago, the former figure now is considered the more representative. The higher price is being paid on small quantities. There is a fair amount of railroad rolling stock to be closed, which promises to aid the market. The Wendnagle Co., Chicago, has taken a contract for a boiler for the Western Shade Cloth Co., Chicago, involving 250 tons. Orders placed for tanks in this district with one maker call for 6000 tons of steel.

The mill quotation is 2.25c., Chicago. Jobbers quote 3.10c. for plates out of stock.

**Structural Material.**—Pending structural business involving about 18,000 tons is before fabricators in this district. Some of it is old business, but is about to be closed. Among the latter projects are the Eitel Building, Chicago, calling for 7500 tons, and Holton Street Viaduct, Milwaukee, 4000 tons. The McClintic-Marshall Co. has been awarded 1520 tons for the Union Indemnity Building, New Orleans. The market still is quoted at 2.25c., Chicago, with reports that concessions down to 2.15c. are being made on attractive business. A number of bridge jobs are about to be placed.

The mill quotation on plain material is 2.25c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

**Reinforcing Bars.**—Contracts for work calling for fair-sized tonnages of reinforcing bars are expected to be placed in this district soon. Among them are the South Park Boulevard viaduct of the Illinois Central Railroad, involving 700 tons, and an addition to the Van Buren Station of this railroad, which will call for 150 tons. The Hotel Sherman Annex, involving 600 tons, and the McCormick Road, involving 500 tons, are expected to be closed this month. No new inquiries of importance have developed during the past week. There

still are a number of small jobs on which figuring is being done. The market for deformed bars is rather unsteady. The price range at warehouse still is quoted at 2.30c. to 2.35c., but it is conceded that an attractive tonnage would bring out a price as low as 2.25c. or lower. A recent award of 175 tons for the Shorecrest Apartments, Milwaukee, went to the Kalman Steel Co., and not to Olney J. Dean & Co., as previously reported.

**Bars.**—Agricultural implement makers, jobbers and the general manufacturing trade are purchasing soft steel bars a little more freely and the market reflects improved tone as a result. It still is quoted at 2.15c., Chicago. Rail steel bars are quoted at a range of 2c. to 2.10c., f.o.b. mill, with a moderate demand existing. The general market for reinforced concrete bars is moving only at a fair rate, with but little new business being closed.

Mill prices are: Mild steel bars, 2.15c.; common bar iron, 2.20c., Chicago; rail steel, 2.10c., Chicago mill.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.80c. for rounds and 4.30c. for flats, squares and hexagons; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.30c. to 2.35c.

**Sheets.**—The slight improvement in the market for sheets which developed recently continues. Producers say they are getting 3.50c. for black No. 28; 4.60c. for galvanized No. 28, and 2.75c. for blue annealed No. 10 on new business, all on a Pittsburgh base, but it is claimed that concessions still are being made to a level equivalent to quotations of Pittsburgh producers. Purchases have been increased slightly by car buying, while small orders are coming from miscellaneous sources.

Mill quotations are 3.50c. to 3.65c. for No. 28 black, 2.70c. to 2.80c. for No. 10 blue annealed, and 4.60c. to 4.80c. for No. 28 galvanized, all being Pittsburgh prices subject to a freight rate to Chicago of 34c. per 100 lb.

Jobbers quote f.o.b. Chicago: 3.80c. for blue annealed; 4.50c. for black, and 5.50c. for galvanized.

**Hot-Rolled Strip.**—The market for hot-rolled strip steel is quiet. Any improvement that has developed is of small proportions only. The automobile industry, however, has shown a little more interest in the market. The price is unchanged at 2.70c., Chicago.

**Cold-Finished Steel.**—No change has developed in the market for cold-finished steel. Demand is small. The price continues to be quoted at 2.80c., Chicago.

**Wire Products.**—Reflecting a better consuming demand, more buying continues to develop in the market for wire products. It is evident that jobbers are not piling stocks, which are said to be fairly low. This covers all lines of wire products. The purchasing comes from a number of sources, including the agricultural community. Makers are of the opinion that the market will become still better with the advance of the season. For mill prices see finished iron and steel, f.o.b. Pittsburgh, page 414.

We quote warehouse prices f.o.b. Chicago: No. 6 to No. 9 bright basic wire, \$3.70 per 100 lb.; extra for black annealed wire, 15c. net 100 lb.; common wire nails, \$3.55 per 100 lb.; cement coated nails, \$2.80 per keg.

**Rails and Track Supplies.**—Releases on suspended rail obligations are coming to mills and involve fair sized tonnages, while the railroads are giving more serious consideration to purchases of rails and fastenings for new work next year. One railroad has closed for 2500 kegs of spikes and 1500 kegs of bolts. The recent order for 12,500 tons of rails placed by the Southern Pacific Railroad went to the Tennessee Coal, Iron & Railroad Co.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled from billets, 2.10c., f.o.b. makers' mill.

Standard railroad spikes, 2.80c. to 3c. mill; track bolts with square nuts, 3.80c. to 4c. mill; steel tie plates, 2.45c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.65c. base, and track bolts, 4.65c. base.

**Bolts and Nuts.**—Makers of machine and carriage bolts in this district have followed the advance in

prices made last week east of here and report that business has been taken at the higher quotations, representing an increase of 10 to 15 per cent. The market is reported as being steadier. There is better buying from the automobile, agricultural and jobbing lines of bolts, nuts and rivets. While the lower prices are being withdrawn, they still are said to be obtainable on quantity business.

Jobbers quote structural rivets, 3.65c.; boiler rivets, 3.85c.; machine bolts up to  $\frac{1}{2}$  x 4 in., 60 per cent off; larger sizes, 60 off; carriage bolts up to  $\frac{1}{2}$  x 6 in., 55 off; larger sizes, 55 off; hot pressed nuts, squares and hexagons, tapped, \$4 off; blank nuts, \$4 off; coach or lag screws, gimlet points square head, 65 per cent off.

**Cast Iron Pipe.**—Somewhat better buying of cast iron pipe comes from municipalities, public utilities and private sources. Most of that taken from the last source constitutes small individual lots, but when accumulated, mount up into fair-sized tonnage. Shipments are being made in 30 to 60 days, depending upon the sizes of the pipe. Some makers report that they are well sold up on 12-in. and smaller sizes for the next 60 days. The city of Chicago will open bids on Aug. 21 for 570 tons of 8-in. cast iron pipe. A Detroit suburb last week considered bids for 1050 tons of 6-, 8-, 12- and 16-in. pipe. Ames, Iowa, opened bids today for 200 tons of 6-, 8- and 10-in. pipe. St. Paul is expected to close within a few days on 400 tons of 6-in. pipe on which it opened bids last week.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., \$58.20; 6-in. and over, \$54.20; Class A and gas pipe, \$5 extra.

**Old Material.**—While no sizable transactions are taking place, the market for old material has advanced from 20c. to \$1 on a number of important grades. The dealers still report paying higher prices than they are offered by mills, as shown by figures quoted on railroad lists, and are not actively seeking business under the circumstances. Instead, they are adding to stocks. The Santa Fe Railroad opened bids yesterday for 4000 tons and the Elgin, Joliet & Eastern took bids today on 1000 tons. A list of the Wabash involving 700 tons has been issued and bids will be opened tomorrow, when the Northern Pacific will also take bids for 2500 tons. The Chesapeake & Ohio has issued a list involving 7000 tons, bids to be received up to Aug. 18.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	\$17.50 to \$18.00
Cast iron car wheels	17.00 to 17.50
Relaying rails, 56 and 60 lb.	26.00 to 27.00
Relaying rails, 65 lb. and heavier	27.00 to 32.00
Forged steel car wheels	17.50 to 18.00
Railroad tires, charging box size	18.25 to 18.75
Railroad leaf springs, cut apart	18.00 to 18.50
Rolls for rolling	16.25 to 16.75
Steel rails, less than 3 ft.	17.00 to 17.50
Heavy melting steel	15.50 to 16.00
Frogs, switches and guards cut apart	15.25 to 15.75
Shoveling steel	15.00 to 15.50
Drop forge flashings	10.25 to 10.75
Hydraulic compressed sheets	12.50 to 13.00
Axle turnings	12.50 to 13.00
Steel angle bars	16.50 to 17.00
Steel knuckles and couplers	17.75 to 18.25
Coil springs	19.00 to 19.50
Low phos. punchings	16.50 to 17.00
Machine shop turnings	9.00 to 9.50
Cast borings	10.50 to 11.00
Short shoveling turnings	10.50 to 11.00
Railroad malleable	17.50 to 18.00
Agricultural malleable	16.00 to 16.50

Per Net Ton	
Iron angle and splice bars	16.50 to 17.00
Iron arch bars and transoms	17.00 to 17.50
Iron car axles	24.00 to 24.50
Steel car axles	17.50 to 18.00
No. 1 busheling	11.25 to 11.75
No. 2 busheling	8.25 to 8.75
Pipes and flues	10.00 to 10.50
No. 1 railroad wrought	12.75 to 14.25
No. 2 railroad wrought	12.50 to 14.00
No. 1 machinery cast	17.50 to 18.00
No. 1 railroad cast	16.50 to 17.00
No. 1 agricultural cast	16.50 to 17.00
Locomotive tires, smooth	16.00 to 16.50
Stove plate	14.00 to 14.50
Grate bars	14.50 to 15.00
Brake shoes	14.50 to 15.00

## New York

### Buying of Steel Sustained—Nails at \$2.75— Pig Iron More Active

NEW YORK, Aug. 12.—More general activity has developed in the pig iron market and among the tonnages closed were 5000 tons of foundry iron for fourth quarter for the Richardson & Boynton Co. and 4000 tons for a company at Port Chester. The General Fire Extinguisher Co. is in the market for 3000 tons for fourth quarter and 700 tons for third quarter, and numerous other smaller tonnages are pending, including one for 1000 tons for third quarter and one for 500 tons for the remainder of the year. Prices show little change except that they are firmer and full differentials are being more generally asked for the higher silicons. For instance, one company which had been selling Buffalo iron as low as \$19 for No. 1X advanced to \$20 last week and \$21 this week, and is selling No. 2X at \$19.50 and No. 2 plain at \$19. In eastern Pennsylvania the \$20 price for No. 2 plain is disappearing and \$20.50 prevails. Unsold stocks of foundry iron are small and some furnaces are finding that they hardly have enough in stock to meet demands of their customers, especially on high silicon irons. For example, Adrian, which was expected to go out Aug. 1, is still in blast and may continue so indefinitely.

We quote delivered in the New York district as follows, having added to furnace price \$2.27 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.44 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25..	\$22.27 to \$22.77
East. Pa. No. 1X fdy., sil. 2.75 to 3.25 .....	23.27 to 23.77
East. Pa. No. 2X fdy., sil. 2.25 to 2.75 .....	22.77 to 23.27
Buffalo, sil. 1.75 to 2.25.....	23.91
No. 2 Virginia, sil. 1.75 to 2.25....	28.44 to 29.44

**Ferroalloys.**—The ferromanganese market is not so active as it was, but some business is still being taken at \$100, seaboard, for the British alloy, and \$99 for the domestic. There are one or two sizable inquiries and total business before the market is between 1500 and 2000 tons. One British seller stands ready to meet any price quoted. A good business under present conditions has been done in spiegeleisen, sales aggregating about 2000 tons at unchanged prices. Occasional carload and small lots sales are being made of 50 per cent ferrosilicon at \$74 to \$75, delivered. Very little if any business is being taken in this market by one small producer who has a limited quantity for sale at around \$70 to \$72, delivered.

**Cast Iron Pipe.**—Purchasing by privately owned water and gas companies enables makers of pressure pipe to maintain a fair rate of operation, in most cases two to three months backlog of orders being on hand. Prices are unchanged. No increase in municipal tenders has yet developed. We quote per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, \$60.60 to \$61.60; 4-in. and 5-in., \$65.60 to \$66.60; 3-in., \$75.60 to \$76.60, with \$5 additional for Class A and gas pipe. The recent reduction in prices of soil pipe produced a spurt of business, but the market has about returned to the previous quietness. Most of the recent ordering was for prompt shipment. We quote discounts of both Southern and Northern makers, f.o.b. New York, as follows; 6-in., 45 to 46¼ per cent off list; heavy, 55 to 56¼ per cent off list.

**Warehouse Business.**—Judged by present indications, August will be a better month for business than July. There has been no unusual increase in any particular product, improvement being chiefly in the volume of orders, rather than tonnage. Inquiries for structural material have, if anything, declined. Prices continue firm in most cases, despite a slight undertone of weakness. Sheets are holding up well and it is only occasionally that a buyer is able to obtain a concession from the established prices. Demand for wrought iron and steel pipe continues fairly active. One seller in this district reports that July sales of pipe were about 5 per cent larger than the sales of July, 1923, even at lower

quotations than prevailed at this time last year. Brass and copper products have been advanced again, in most cases ¼c. per lb. and on a few products ½c. per lb. We quote prices on page 426.

**Finished Iron and Steel.**—The somewhat improved buying that marked the early days of August has been maintained. There is more evidence that buyers are maneuvering for the price at which volume buying will develop, but there is an absence of any sizable inquiries. Some of the plate business recently pending was taken up by an eastern Pennsylvania mill at a price less than 1.70c., Pittsburgh basis, and included was a round lot of plates for locomotives. The weakness in nails has resulted in bookings at a price of \$2.75 a keg, but otherwise there is no fresh easing of prices, even the bulk of sheet business being done on a level of 4.60c., Pittsburgh, for the galvanized product and 3.50c. for the black. Some of the lower priced sheets are not looked on with favor, the result of a combination of adverse experiences in the working qualities of the sheets and some question as to the responsibility of some of the mills to make good any rejections. Bar iron is not particularly active and still sells at a basis of 2.10c., Pittsburgh, though in recent competition 2.05c. has been done. At the moment, the volume of fresh inquiries in structural steel shows a falling off but the amount of work under negotiation remains large.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.49c. to 2.54c.; plates, 2.04c. to 2.14c.; structural shapes, 2.34c. to 2.44c.; bar iron, 2.44c.

**Coke.**—Drastic curtailment of production by the Frick company has as yet had no appreciable effect on the coke market. Standard foundry is quotable at \$4.25 to as high as \$5.25 on certain brands and standard furnace ranges from \$3.25 to \$3.50 with the possibility of shading the low price. By-product is unchanged at \$10.41, Newark and Jersey City, N. J. One coke company has put in operation 125 ovens to make foundry coke owing to increased demand.

**Old Material.**—While a part of the upward tendency of the market, principally on heavy melting steel, is the result of dealer and broker activity, it is chiefly true of shipments to Bethlehem. Strictly No. 1 heavy melting steel of railroad quality or equivalent is being purchased at \$16 to \$16.50, principally the latter quotation, delivered to eastern Pennsylvania consumers in Conshohocken, Coatesville, Pottsville, Claymont, Del., etc. While practically all of these purchases are to fill orders at mills paying \$16.50 or \$17 per ton delivered, the shipments to Bethlehem, bought at \$15.50 and \$16, are only in a few instances going to fulfill contracts at \$16 per ton, delivered. On specification pipe shipped to Lebanon and Milton, Pa., consumers, dealers until the past week had paid as high as \$16 per ton, delivered. Refusal of the consumers to advance their buying price to justify this has resulted in a decline in the offering price of dealers and brokers to \$15.50 per ton. Borings and turnings are still inactive, but shipments are being made to Scottdale, Riddlesburg, Birdsboro and Harrisburg. Brokers are offering as high as \$13.50 per ton, delivered Harrisburg. Cast borings are also quoted at \$13.50 per ton, delivered Harrisburg.

Buying prices per gross ton New York follow:

Heavy melting steel, yard.....	\$12.00 to \$12.50
Heavy melting steel, railroad or equivalent .....	12.50 to 13.25
Rails for rolling.....	14.25 to 14.75
Relaying rails, nominal.....	24.00 to 25.00
Steel car axles.....	17.50 to 18.50
Iron car axles.....	24.00 to 25.00
No. 1 railroad wrought.....	14.50 to 15.00
Forge fire .....	8.75 to 9.25
No. 1 yard wrought, long.....	13.50 to 14.00
Cast borings (clean).....	9.00 to 9.50
Machine-shop turnings.....	9.00 to 9.50
Mixed borings and turnings.....	7.50 to 8.00
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	11.75 to 12.25
Stove plate .....	11.25 to 11.75
Locomotive grate bars.....	11.50 to 12.50
Malleable cast (railroad).....	14.00 to 14.50
Cast iron car wheels.....	13.50 to 14.00
No. 1 heavy breakable cast.....	12.50 to 13.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast.....	\$15.00 to \$15.50
No. 1 heavy cast (columns, building materials, etc.), cupola size .....	13.00 to 13.50
No. 2 cast (radiators, cast boilers, etc.) .....	12.00 to 12.50

## Cincinnati

### Pig Iron Market Very Quiet—Furnace Coke Price Shaded

CINCINNATI, Aug. 12.—The Cincinnati pig iron market has again quieted down, and sales last week were light. Inquiry has dropped off this week to practically nothing. The largest sale reported last week was of 2,000 tons of foundry iron to a central Ohio melter made by a Lake furnace, the price figuring close to \$18.50, furnace. A nearby melter bought 1000 tons from an Ironton district furnace, at around \$19.50, furnace, and it is said less than \$19.50 might be done on attractive tonnages. A few small lot sales of Southern iron have been made, the prices ranging from \$17.50 to \$18, Birmingham. A tightening of the silvery market is reported, though it is still possible to buy under the schedule. There is no demand for basic or Bessemer grades.

Based on freight rates of \$4.05 from Birmingham and \$2.27 from Ironton we quote f.o.b. Cincinnati:

Southern fdy., sil. 1.75 to 2.25 (base)	\$21.55 to \$22.05
Southern fdy., sil. 2.25 to 2.75	22.05 to 22.55
Southern Ohio silvery, 8 per cent	31.77
Southern Ohio fdy., sil. 1.75 to 2.25	21.77
Southern Ohio basic	21.27
Southern Ohio malleable	21.77

**Tool Steel.**—Reports of better business are heard, but the current activity is confined to a small number of metal manufacturers, the general run of machine tool and small tool shops ordering only in small lots. Prices continue steady, the quotation for 18 per cent tungsten high-speed steel ranging from 70c. to \$1 per lb., according to brand.

**Sheets and Tin Plate.**—The demand for tin plate is rather heavy, both in specifications on contracts and new inquiries. The canning season is now in full swing, and fill-in needs are urgent. Price of tin plate is holding at \$5.50 per base box. Reduction of automobile body sheets to 4.75c. has brought out a flow of orders, and bookings during the past week have been good. Reports of galvanized sheets being quoted at 4.40c., more especially in Southern territory, are current, but orders still are being secured at 4.50c. The market for blue annealed remains at 2.60c., with 3.40c. being quoted for black.

**Structural Activity.**—The week was very quiet, no new inquiries appearing and no lettings reported. A stiffening of fabricated prices is noted, the extremely low prices of some weeks ago having disappeared entirely.

**Reinforcing Bars.**—Demand runs to less than 100-ton lots but the aggregate is considerable. No large inquiries have appeared, and bookings are mainly made up of tonnages for road work and for small buildings. Prices are unchanged, rail steel bars being available from 1.90c. for large tonnages to 2.10c. for carload orders. Bars from new steel are held at 2.15c. on going business.

**Warehouse Business.**—Jobbers report orders continue to increase, and August has started off considerably ahead of either June or July. There have been no price changes.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4.35c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds, 4.05c.; cold-rolled flats, squares and hexagons, 4.55c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, 4.60c.; No. 28 galvanized sheets, 5.75c.; No. 9 annealed wire, 3.30c.; common wire nails, \$3.30 per keg base; cement coated nails, \$3 per keg.

**Finished Materials.**—Business continues to improve steadily, though slowly. Jobbers and manufacturers apparently are more confident of the future as, during the past week, several fair-sized inquiries for stock purposes have come out and indications point to orders being placed. Among the inquiries is one from an implement manufacturer for 1000 tons of bars and shapes. Another from a fabricator is for 700 tons for stock. The Louisville & Nashville Railroad is inquiring for 200 tons of tank plates. Prices of bars, shapes and

plates are unchanged from last week, and apparently are stiffening in the Pittsburgh district. There is a report current that a Chicago district mill has offered bars at 2.10c., Chicago. Little improvement in the demand for track accessories is noted and prices are nominal. Track spikes are quoted today at \$2.75, but it is intimated that a larger tonnage would be booked below this figure. Wire nails have been sold on the basis of \$2.80, Ironton, with a river freight rate to Cincinnati of 14c. per keg, and some Pittsburgh district mills have met this price. Reports of plain wire at \$2.50 are also heard, and orders have been lost at \$2.60.

**Coke.**—Specifications for August exceed those of July by 30 per cent, and continued improvement is looked for. A nearby steel works bought 6000 tons of run of oven by-product coke for slightly less than the schedule for this grade. On standard grades the market is unchanged.

Connellsville furnace, \$3; foundry, \$4.50; New River foundry, \$8.50; Wise County furnace, \$3.75; foundry, \$4.50; by-product foundry, \$6.50, Connellsville basis.

**Old Material.**—A sale of 500 tons of borings to a melter in this district is reported at around \$12, delivered, and 500 tons of turnings were disposed of to a Cleveland consumer at around \$14.50, delivered. Otherwise the consumer activity was confined to carload lots. Dealers are buying heavy melting steel, and the market has advanced 50c. Other grades are not in demand, and prices generally are unchanged from last week.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel	\$13.50 to \$14.00
Scrap rails for melting	12.00 to 12.50
Short rails	17.00 to 17.50
Relaying rails	28.50 to 29.00
Rails for rolling	14.00 to 14.50
Old car wheels	13.00 to 13.50
No. 1 locomotive tires	14.00 to 14.50
Railroad malleable	15.50 to 16.00
Agricultural malleable	14.00 to 14.50
Loose sheet clippings	8.50 to 9.00
Champion bundled sheets	10.50 to 11.00

Per Net Ton	
Cast iron borings	9.50 to 10.00
Machine shop turnings	8.50 to 9.00
No. 1 machinery cast	18.00 to 18.50
No. 1 railroad cast	14.50 to 15.00
Iron axles	21.00 to 21.50
No. 1 railroad wrought	10.50 to 11.00
Pipes and flues	7.50 to 8.00
No. 1 busheling	9.50 to 10.00
Mixed busheling	7.00 to 7.50
Burnt cast	10.50 to 11.00
Stove plate	10.50 to 11.00
Brake shoes	11.50 to 12.00

## Buffalo

### Increasing Activity and Strength—Pig Iron Differentials to Rule—Scrap in Heavy Demand

BUFFALO, Aug. 11.—The feature of the week's pig iron market was the announcement by a local maker that differentials on foundry and malleable iron would be sought and rigidly adhered to. The schedule as announced is \$19 base; \$19.50 for silicon, 2.25 to 2.75 per cent; \$20 for 2.75 to 3.25 and \$20.50 for 3.25 to 3.75. Weak spots in the Buffalo market have been wiped out, it is believed, and observers say that the \$18.50 base has gone. A 3000-ton lot of malleable was closed at prices in accordance with the above schedule of differentials. Inquiry has been around 20,000 tons, including that of a specialty maker seeking 3600 tons of foundry and an Eastern manufacturer of heating apparatus who sought 5000 tons of foundry. A Providence inquiry was for 600 tons, with the possibility that 3000 tons might be purchased. Makers feel that the upward trend of pig iron prices has begun and, with all but six district stacks out of blast, the market will continue to grow firmer.

We quote prices per gross ton f.o.b. Buffalo as follows:

No. 2 plain, sil. 1.75 to 2.25	\$19.00
No. 1 foundry, sil. 2.75 to 3.25	\$19.00 to 20.00
No. 2 foundry, sil. 3.25 to 3.75	19.00 to 19.50

**Finished Iron and Steel.**—Prices are firming and an improvement is noticeable in inquiries and in specifications. Bar price is holding fairly firm to 2.15c., and, though this might be shaded on very desirable tonnage, only one instance is noted of this, where the reduction made was about \$1 a ton. Sheets are rather inactive, though the market shows at least one inquiry for 100 tons of black. The going price is 3.50c. for black and about 4.60c. for galvanized. Pipe specifications are about the same, with the jobbing demand showing signs of improvement, particularly in butt weld sizes. Nut and bolt specifications are better, but it is reported that the Buffalo Bolt Co. and the Kirk-Latty Co. of Cleveland have withdrawn from the market, pending improvement of prevailing discounts from the sellers' point of view.

Steel bars, 3.30c.; iron bars, 3.35c.; reinforcing bars, 3.30c.; structural shapes, 3.40c.; plates, 3.40c.; No. 10 blue sheets, 4.05c.; No. 28 black sheets, 4.75c.; No. 28 galvanized sheets, 5.85c.; bands, 4.05c.; hoops, 4.40c.; cold finished rounds, 4.20c.; cold-finished shapes, 4.70c.

**Old Material.**—The dealers' market of the past two weeks has grown more active and increasing interest is evident on the part of mills. It is difficult to know whether new buying is being done by one of the mills or whether this represents belated shipments on an old order, but the effect is the same, viz., of elevating the prices on certain commodities. One dealer states that strictly No. 1 heavy melting steel is now worth \$17 to \$17.50, and not very much tonnage is to be had at this price. Low phosphorus is now quoted at \$18.50 to \$19.50 and No. 1 wrought at \$15 to \$16. An active demand exists for hydraulic compressed, a fair demand for low phosphorus and an active call for turnings, borings and stove plate. A local mill is said to have paid \$16 to \$16.50 on some small lots of heavy melting steel, and Youngstown, eastern Pennsylvania and Pittsburgh districts are said to be in the market for the same material. A local mill has bought some No. 1 busheling at \$14 and some small lots of flashings at \$14.50.

We quote f.o.b., gross ton, Buffalo, as follows:

Heavy melting steel.....	16.50 to 17.00
Low phosphorus, 0.04 and under.....	18.50 to 19.00
No. 1 railroad wrought.....	15.00 to 15.50
Car wheels.....	17.50 to 18.00
Machine shop turnings.....	11.50 to 12.50
Cast iron borings.....	12.00 to 12.50
No. 1 busheling.....	14.50 to 15.50
Stove plate.....	16.00 to 16.50
Grate bars.....	15.00 to 15.50
Bundled sheets.....	12.00 to 12.50
Hydraulic compressed.....	15.50 to 16.00
Railroad malleable.....	17.00 to 18.00
No. 1 machinery cast.....	17.00 to 18.00

## Birmingham

### Only Small Lot Sales of Pig Iron—Steady Demand for Pipe

BIRMINGHAM, ALA., Aug. 12.—No material improvement in the Southern pig iron market is reported though several incidents are pointed to which give encouragement. A few small lots sales were consummated for shipment north of the Ohio River again and a little tonnage is going into the East. The aggregate business, however, is far from satisfying. Inquiries are a little more numerous from the Middle West, but freight rates prevent competition with the iron of that territory. The local consumption is still showing some improvement, but the total is not up to expectations. Furnace interests have hopes of being able to maintain the present pace of production. No concessions are to be had on present quotations.

We quote per gross ton, f.o.b. Birmingham district furnace as follows:

No. 2 foundry, 1.75 to 2.25 sil.....	\$17.50 to \$18.00
No. 1 foundry, 2.25 to 2.75 sil.....	18.00 to 18.50
Basic.....	18.50 to 19.00
Charcoal, warm blast.....	31.00

**Cast Iron Pipe.**—Lettings for cast iron pipe received by producers of gas and water pipe in this district continue steady and no doubt is expressed now as to the warrant for capacity operation during the third quarter and a good start on the fourth. Pipe makers are now urging winter buying again in order that there will be

distribution of the business over the year, as was done last winter. Concessions on price are reported in the sanitary pipe trade and some sales are being made. Agencies handling the output of groupings of soil pipe shops are in strong competition now in the Alabama field. The Hammond-Byrd Iron Co. for years has handled the output of several shops. Recently C. A. Hamilton, W. F. Johnston and Whitfield Clark, who have been in the pipe trade a long time, took up the same line, and now control Anniston, Chattanooga, including the Rabe Pipe & Foundry Co., and Bessemer plants, including Superior Pipe Co. Recently the Gulf States Pipe Corporation, a pipe sales concern, was announced, operating offices in Anniston, Ala., and controlling plants in Anniston, Knoxville and Birmingham.

**Steel.**—Steel mill operations in the Birmingham district are not so active as they have been. The Gulf States Steel Co. has two out of six open-hearth furnaces in operation. The subsidiaries of the United States Steel Corporation, the Tennessee Coal, Iron & Railroad Co. and the American Steel & Wire Co. maintain activity around 80 to 85 per cent of capacity. Steel bars are quoted 2.30c., Birmingham.

**Coke.**—No improvement in the coke market in the South is noted. Sales are in small lots and contracts scarce. All negotiations are for immediate delivery, practically. Production is being readjusted as iron making is held down. Quotations are still weak, ranging from \$4.50 to \$5.50 for both beehive and by-product coke.

**Scrap.**—A little activity is noted in steel scrap, low price of pig iron affecting the other classes. Quotations continue about the same as have obtained for the past several weeks, except No. 1 railroad wrought took a \$1 per ton upward turn. Stove plate is moving and cast has settled down some.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Cast iron borings, chemical.....	\$15.00 to \$16.00
Heavy melting steel.....	11.00 to 12.00
Railroad wrought.....	12.00 to 13.00
Steel axles.....	17.00 to 18.00
Iron axles.....	19.00 to 19.50
Steel rails.....	11.00 to 12.00
No. 1 cast.....	15.00 to 16.00
Tram car wheels.....	15.00 to 16.00
Car wheels.....	14.00 to 15.00
Stove plate.....	14.00 to 15.00
Machine shop turnings.....	6.00 to 7.00
Cast iron borings.....	7.00 to 8.00
Rails for rolling.....	15.00 to 16.00

## Boston

### Better Inquiry for Pig Iron Develops for Fourth Quarter Shipment

BOSTON, Aug. 12.—Unexpectedly a better inquiry for pig iron has developed, mostly for fourth quarter shipment. A Providence, R. I., melter wants 400 tons No. 1X and 200 tons No. 2X for August and September delivery, and 3000 tons in about the same proportions for fourth quarter. A Worcester, Mass., foundry is inquiring on 100 tons of silicon 4.00 to 4.50, September iron, 50 tons silicon 3.25 to 3.50, October iron, and 500 tons malleable, fourth quarter iron. A New Britain, Conn., plant wants several hundred tons eastern Pennsylvania No. 2X and No. 1X, fourth quarter, and there are numerous smaller inquiries, ranging from car lots to 100 tons, involving No. 2X, No. 1X and even higher silicons, very largely for fourth quarter. In addition, some foundries desiring eastern Pennsylvania iron for fourth quarter have signified intentions of coming into the market as soon as furnaces make a price. At least two Buffalo furnaces and a New York furnace have accepted fourth quarter business on a basis of \$19.50 for No. 2X and No. 1X. Sales for the past week aggregate rising 3000 tons in this territory, Connecticut excluded, mostly small individual tonnages. A Providence, R. I., foundry bought several hundred tons high silicon charcoal and No. 2X eastern Pennsylvania, but price details are lacking. The original inquiry called for some No. 2X Virginia iron, which was offered at \$24 furnace, but turned down. Alabama No. 2 foundry iron was offered the past week at \$18 furnace

or \$26.61 delivered. A new freight rate schedule on Alabama iron becomes effective Sept. 12. It shows little change in all rail rates, but slight advances on some rail and water rates.

We quote delivered prices on the basis of the latest reported sales as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia and \$9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25.....	\$23.65 to \$25.15
East. Penn., sil. 2.25 to 2.75.....	23.65 to 25.15
Buffalo, sil. 1.75 to 2.25.....	23.66 to 23.91
Buffalo, sil. 2.25 to 2.75.....	23.66 to 24.41
Virginia, sil. 2.25 to 2.75.....	29.92 to 31.92
Virginia, sil. 2.25 to 2.75.....	29.92 to 31.82
Alabama, sil. 1.75 to 2.25.....	27.60 to 27.10

**Finished Material.**—Stone & Webster, Inc., Boston, have awarded 2000 tons of structural steel for a Pennsylvania gas and electric lighting plant, the largest individual order of this kind placed here in several months. Competition among fabricators for jobs is exceptionally keen, consequently the margin between cost and profit is unusually small. The structural steel market generally is 2c. Pittsburgh base, but 1.90c. is reported to have been done recently. Plates are firm at 1.75c. Pittsburgh base. Buying continues of a hand-to-mouth character. Bars are steady at 2.15c. Pittsburgh, with slightly more activity.

Soft steel bars, \$3.26½ base per 100 lb.; flats, \$4.15; concrete bars, \$3.51½ to \$3.64; structural steel, \$3.36½; tire steel, \$4.50 to \$4.75; open-hearth spring steel, \$5 to \$10; crucible spring steel, \$12; steel bands, \$4.01½ to \$5; hoop steel, \$5.50 to \$6; cold rolled steel, \$4.15 to \$4.65; toe calk steel, \$6; refined iron bars, \$3.26½; best refined bars, \$4.60; Wayne, \$5.50; Norway, \$6.60 to \$7.10; plates, ¼-in. and heavier, \$3.36½; No. 10 blue annealed sheets, \$4.16½; galvanized sheets, \$6 base; black sheets, \$5 base.

**Coke.**—Because some of the largest users are closed or operating on reduced schedules, the movement of by-product foundry coke from ovens has slowed up noticeably this month. Shipments against contracts for the first fifteen days of this month were less than for any similar previous period this year. Both the New England Coal & Coke Co. and the Providence Gas Co. quote by-product fuel at \$11.50 a net ton, delivered within New England. New Jersey by-product makers are again actively bidding for business in this territory at a delivered price approximately \$1 under those quoted by New England ovens. Comparatively little of this coke has been sold, however. Almost no interest is manifested in Connellsville foundry coke.

**Old Material.**—Old materials in general are moving in limited volume because holders are waiting for higher prices. Supplies are small, due to industrial conditions throughout New England the past two months or so. Prices on certain kinds of material are firm and higher. Heavy melting steel has been bought for Massachusetts and Rhode Island consumption at \$11.50 to \$12 on cars shipping point and at \$12 to \$12.50 for eastern Pennsylvania shipment, these prices representing an advance of 25c. to 50c. a ton. One or two cars of machine shop turnings fetched \$9 a ton shipping point, but most dealers are paying \$8.25 to \$8.50. Mixed borings and turnings are considerably higher, and the market for shafting, street car axles, railroad wrought and railroad malleable is higher. Prices on No. 1 machinery cast take a wide range. Cotton machine cast has sold as high as \$20.50 a ton delivered, while regular cast has changed hands at \$19, \$19.50 and \$20. There is no market for No. 2 machinery cast, and practically none for stove plate.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast.....	\$19.00 to \$20.50
No. 2 machinery cast.....	16.50 to 17.50
Stove plates.....	14.50 to 15.00
Railroad malleable.....	17.50 to 18.00

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$11.50 to \$12.25
No. 1 railroad wrought.....	13.50 to 14.00
No. 1 yard wrought.....	11.50 to 12.00
Wrought pipe (1-in. in diam. over 2 ft. long).....	11.00 to 11.50
Machine shop turnings.....	8.00 to 8.50
Cast iron borings, chemical.....	9.00 to 9.50
Cast iron borings, rolling mill.....	8.50 to 8.75
Blast furnace borings and turnings.....	8.50 to 9.00
Forged scrap and bundled skeleton.....	17.00 to 18.00
Shafting.....	16.00 to 17.00
Street car axles.....	16.00 to 17.00
Rails for rolling.....	13.00 to 13.50

## St. Louis

### Heavy Marking-Up of Scrap Material—Improved Farm Conditions Felt in Many Lines

ST. LOUIS, Aug. 11.—Scattered buying of pig iron by melters who heretofore have remained aloof from the market has featured the local situation during the past few days. The radically better conditions obtaining in the farming areas have had a beneficial effect on sentiment among stove makers, implement manufacturers and other interests purveying to farm needs, and these have begun to take stock of their pig iron supplies. Sales reported totaled close to 9000 tons, including 7000 tons of basic, sold to an East Side melter by the St. Louis Coke & Iron Co. A car builder purchased 800 tons of foundry iron, and 250 tons were taken by a local machinery manufacturer. A western Missouri specialty maker purchased 400 tons for shipment through September, and 150 tons of charcoal iron were taken by a Texas melter. Two leading stove interests have increased their operations to 50 per cent of capacity. Concerns specializing in gray iron castings report some improvement in orders since Aug. 1. Prices are unchanged, but offerings are less liberal and the trend is firmer.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices \$2.16 freight from Chicago, \$3.28 from Florence and Sheffield (rail and water), \$5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25.....	\$21.16 to \$21.56
Northern malleable, sil. 1.75 to 2.25.....	21.16 to 21.56
Basic.....	21.16
Southern fdy., sil. 1.75 to 2.25 (rail).....	23.17 to 23.67
Southern fdy., sil. 1.75 to 2.25 (rail and water).....	21.23 to 21.73
Granite City iron, sil. 1.75 to 2.25.....	21.81 to 22.31

**Finished Iron and Steel.**—The past week or ten days have been featured by more active buying by the carriers, some sizable orders for track fastenings and bridge material having been placed and a number of inquiries made. Car builders also are showing more signs of life, manifested particularly in the way of accumulating material for application on recent car orders. As has been the case for the past two months, a steady stream of small orders for oil field supplies has been coming in from the Arkansas and Louisiana fields. One company in the Smackover field is inquiring for a round tonnage of tank plates. Activities among the fabricators is confined largely to work on small orders, the volume of which bulks well in the aggregate. Sales of cotton fastenings to Arkansas and southern Missouri are reported well in excess of the corresponding period a year ago. Prices generally remain unchanged.

For stock out of warehouse we quote: Soft steel bars, 3.35c. per lb.; iron bars, 3.55c.; structural shapes, 3.45c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 4.10c.; No. 25 black sheets, cold-rolled, one pass, 5c.; cold rolled rounds, shafting and screw stock, 4.15c.; structural rivets, 3.90c.; boiler rivets, 4.10c.; tank rivets, ½-in. and smaller, 60 per cent off list; machine bolts, 55 and 5 per cent; carriage bolts, 40 and 5 per cent; lag screws, 60 and 5 per cent; hot pressed nuts, squares or hexagons, blank or tapped, \$3.50 off list.

**Coke.**—Local by-product manufacturers report a continued fair current demand for foundry coke, but little disposition to stock up. Representatives of Eastern ovens say their business is the smallest ever recorded for this time of year, virtually all their customers having turned to by-product coke. Some slight improvement in the demand for domestic sizes has taken place within the past two weeks, but the total volume of householders' bins is considerably below normal for this date. Dealers are contracting sparingly, and declare they will not increase their commitments until their customers begin to buy.

**Old Material.**—Continued strength features the market for discard iron and steel. The industries are taking more interest in supplies, particularly materials for steel-making plants. A number of items in the steel specialty class are unusually scarce, and are bringing top prices. Heavy melting steel was marked up to \$15, a new high on the movement. The St. Louis Coke & Iron Co. purchased a round tonnage of borings and

other materials for its blast furnace. Stocks in all positions are light, and little new scrap is coming into sight. Railroad offerings included 950 tons by the Missouri, Kansas & Texas, 3700 tons by the Santa Fe, 1300 tons by the Mobile & Ohio, 19 cars by the Pullman Co. and 10 cars by the Kansas City Southern.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails .....	\$12.00 to \$12.50
Rails for rolling .....	17.25 to 17.50
Steel rails less than 3 ft. ....	18.50 to 19.00
Relaying rails, 60 lb. and under ..	25.00 to 26.00
Relaying rails, 70 lb. and over ..	32.50 to 33.50
Cast iron car wheels .....	16.50 to 17.00
Heavy melting steel .....	15.00 to 15.50
Heavy shoveling steel .....	14.50 to 15.00
Frogs, switches and guards cut apart .....	16.50 to 17.00
Railroad springs .....	20.00 to 20.50
Heavy axles and tire turnings ..	11.50 to 12.00
No. 1 locomotive tires .....	17.00 to 17.50

Per Net Ton	
Steel angle bars .....	15.00 to 15.50
Steel car axles .....	18.00 to 18.50
Iron car axles .....	22.50 to 23.00
Wrought iron bars and transoms ..	17.00 to 17.50
No. 1 railroad wrought .....	12.00 to 12.50
No. 2 railroad wrought .....	13.25 to 13.75
Cast iron borings .....	9.25 to 9.75
No. 1 bushelings .....	11.50 to 12.00
No. 1 railroad cast .....	17.00 to 17.50
No. 1 machinery cast .....	17.50 to 18.00
Railroad malleable .....	14.00 to 14.50
Machine shop turnings .....	7.00 to 7.50
Champion bundled sheets .....	7.50 to 8.00

## San Francisco

### Lowest Figures in Months on English and Scotch Pig Iron

SAN FRANCISCO, Aug. 6.—The slowing down process is still the dominant feature in the steel and iron trade, not only in this city and vicinity but at all the leading points on the coast. As might be expected, with a long-continued dullness there has been a sharp decline in prices, and some of the best informed sellers are not backward in expressing their belief that prices are going to be lower before they are again advanced. Some important new work is developing which will require a liberal tonnage of steel in the aggregate. The Pacific Telephone and Telegraph Co. has started its new building in this city, which will use about 1000 tons of steel, and the State Highway Commission announces it will soon be ready to ask bids on two new steel and concrete bridges. One over the Klamath river will cost over \$500,000 and will require more than 2,500 tons of steel, while the other costing \$150,000 will use about 1,000 tons. In Siskiyou County, the California-Oregon Power Co. has just completed surveys for its new power plant, which will cost over \$4,000,000, and some 6,000 tons of steel will be utilized. Plans are about ready and bids will be asked for in the near future, probably 90 days. The Pan-American Petroleum Co. plans the immediate construction of six 55,000-bbl. oil tanks and ten 37,500-bbl. tanks, which will require 600 tons of shapes and 2860 tons of plates.

**Pig Iron.**—Sales have been rather light and prices are on the down grade. Importers are offering the best grades of English and Scotch iron at \$28 to \$28.50 per ton delivered. This is the lowest figure which has ruled for many months. Sales are confined to small lots, and there is nearly 1,200 tons now held in storage in Oakland. In addition there are several cargoes on the way. Both the Southern Pacific Co. and the Atchison, Topeka & Santa Fe Railroad Co. have been among recent purchasers. French and Belgian iron is coming to hand freely and meets with a fair inquiry considering the quiet trade situation. Prices are now being quoted at from \$25 to \$25.50 per ton, and some buyers say the minimum figure is shaded about 50c. on a round lot.

**Coke.**—Some business is in progress all the time, but the buyers are inclined to hold off, merely contenting themselves with the smallest quantities they can get along with. Some little tonnage has arrived during the past month, and the bulk of it has been placed. Prices on the best foreign grades are now around \$18

per ton. That price has occasionally been shaded, but it is doubtful if there have been any sales above that figure.

**Finished Steel and Iron.**—Business continues inactive with the bulk of transactions confined to structural lines and for concrete reinforcement purposes. While there has been every effort put forth to maintain prices, the task has been most difficult and hardly successful. The inquiry for plates continues moderate with prices unsteady. Several sales of desirable tonnages have been closed during the past ten days at 2.35c and at least one lot at 2.30c. For small parcels 2.40c is the asking figure, but few buyers seem willing to pay it. Shapes are offered at 2.50c and, as considerable work is in hand, buyers cannot get much in the way of concessions. Some 6,500 tons were placed during the last two weeks, and an award on 2,160 tons is looked for early next week. Merchant bars are held fairly steady, but sales are moderate.

**Old Material.**—The market is so quiet that the largest handlers say prices are nominal. Some few sales effected during the last ten days were at \$10 per ton. This was heavy melting steel, and the buyers appeared indifferent. They purchased small quantities only.

## Philadelphia

### Increased Buying of Pig Iron, Including Large Tonnage of Basic

PHILADELPHIA, Aug. 12.—The outstanding development of the past week has been the sale of a round tonnage of basic pig iron and of numerous smaller tonnages of foundry grades. While it is not clear that a general buying movement has started, there is hopefulness that this is true, and the increased activity certainly has given a more cheerful feeling to both buyers and sellers.

In finished materials, there has been only moderate activity. The scrap market continues strong. The only imports of the past week were 25 tons of scrap from England and 225 tons of structural shapes from Belgium.

**Pig Iron.**—The principal melter in this district of basic pig iron placed orders amounting to about 25,000 tons the past week, with an average delivered price of about \$20 per ton. This activity was not, perhaps, as significant as that in foundry pig iron, of which there were numerous orders amounting in the case of one firm to 7500 tons, and it is probable that the total for all sellers was considerably above that amount. Prices show little actual change, but an increased firmness and less disposition to absorb freight. Interest naturally centers in the last quarter, as requirements up to that time have been to a very large extent provided for. Shipments are being made regularly, and in some cases melters are urging more prompt deliveries. In referring to the low phosphorus market in this column last week, the fact that the Chateaugay furnace at Standish, N. Y., is in operation, producing iron averaging not over 0.015 phosphorus, was overlooked. A new inquiry for foundry pig iron is from the General Fire Extinguisher Co. for 700 tons for third quarter, and 3000 tons for fourth quarter. The American Bridge Co. is in the market for 5000 to 10,000 tons of basic for delivery to Pencoyd.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil. ....	\$20.76 to \$22.13
East. Pa. No. 2X, 2.25 to 2.75 sil. ....	21.26 to 22.63
East. Pa. No. 1X .....	21.76 to 23.13
Virginia No. 2 plain, 1.75 to 2.25 sil. ....	28.17 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil. ....	28.67 to 29.17
Basic delivered eastern Pa. ....	20.00 to 21.00
Gray forge .....	21.00 to 22.00
Malleable .....	22.00 to 22.50
Standard low phos. (f.o.b. furnace) .....	24.00 to 25.00
Copper bearing low phos. (f.o.b. furnace) .....	24.00 to 25.00

**Ferroalloys.**—Since the price of ferromanganese was reduced to \$99 for domestic and \$100 for British, the market has been extremely quiet, and no inquiries of importance are now pending.

**Billets.**—One seller has closed a sale of two lots of 500 tons each for forging billets at \$43, Pittsburgh base, and has under consideration inquiries for 2000 tons of reolling billets. On the latter it is probable that the regular price of \$38 will be shaded, but not to any great extent.

**Plates.**—Eastern plate mills continue to enjoy fair business in numerous small orders and one company is considering putting on an additional open-hearth furnace. The usual quotation in small lots ranges from 1.80c. to 1.90c., Pittsburgh, while reports of 1.75c., or even less, available on large business, are still heard.

**Structural Material.**—Orders from fabricating shops are coming in even more satisfactorily than during the past week or two, when improvement was noted. Some of the steel companies are showing less disposition to make concessions, and contracts for stock are made only against actual specifications. The Luzerne County & Electric Corporation has awarded 2000 tons for the Hunlock Creek power station to the Shoemaker Bridge Co.

**Bars.**—Although the demand for bars is far from active, prices are well maintained; in fact, bars, from a price standpoint, are the strongest of the finished materials, at 2.15c., Pittsburgh, for soft steel bars and 2.10c. for bar iron.

**Bolts, Nuts and Rivets.**—The regularities which have been so marked for a long time are less prominent. Specifications are coming in more satisfactorily and sellers are better satisfied with conditions.

**Old Material.**—A Pennsylvania Railroad list amounting to about 35,000 tons went at good prices last week, but it is understood that all of the scrap is for shipment to Pittsburgh. While it is understood that one large buyer of heavy melting steel of the past week or two is not willing to pay \$16, others have paid more than \$17, and the prevailing price is at least \$1 higher than last week. On a number of other kinds of scrap, prices have been marked up from 50c. to \$1, including steel rails for rolling, low phos., cast borings, and steel axles.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel.....	\$17.00 to \$17.50
Scrap rails .....	16.50 to 17.00
Steel rails for rolling.....	18.00 to 18.50
No. 1 low phos., heavy 0.04 and under .....	21.00
Couplers and knuckles.....	20.00 to 20.50
Cast-iron car wheels.....	17.50 to 18.00
Roller steel wheels.....	20.00 to 20.50
No. 1 railroad wrought.....	18.50 to 19.00
No. 1 yard wrought.....	17.00 to 17.50
No. 1 forge fire.....	13.75 to 14.25
Bundled sheets (for steel works) .....	13.50 to 14.00
Mixed borings and turnings (for blast furnace use).....	11.50 to 12.00
Machine shop turnings (for steel works use) .....	14.00 to 14.50
Machine shop turnings (for rolling mill use) .....	14.00 to 14.50
Heavy axle turnings (or equivalent) .....	16.00 to 16.50
Cast borings (for steel works and rolling mills) .....	14.00
Cast borings (for chemical plants) .....	14.50 to 15.00
No. 1 cast.....	17.50 to 18.50
Heavy breakable cast (for steel plants) .....	17.00 to 17.50
Railroad grate bars.....	15.50 to 16.00
Stove plate (for steel plant use) .....	15.50 to 16.00
Wrought iron and soft steel pipes and tubes (new specifications) .....	16.00 to 16.50
Shafting .....	23.50 to 24.50
Steel axles .....	23.00 to 24.00

**Sheets and Tin Plate.**—Reports of low prices on sheets continue to be heard. These are attributed to a large extent to seconds which have been offered freely on the market. We note a sale of 500 tons of blue annealed at 2.70c., while 3.50c. for black and 4.60c. for galvanized, both Pittsburgh, continue as the usual quotations.

**Warehouse Business.**—A gratifying increase has appeared in warehouse business. One large warehouse reports that during the past week orders came in

more freely than at any time during the past six months. Although quotations are unchanged, prices show a stiffening tendency.

Soft steel bars and small shapes, 3.22c.; iron bars (except bands), 3.22c.; round edge iron, 3.50c.; round edge steel, iron finished, 1½ x ¼ in., 3.50c.; round edge steel planished, 4.30c.; tank steel plates ¼ in. and heavier, 3.32c.; tank steel plates, ½ in., 3.47c.; blue annealed steel sheets, No. 10 gage, 3.75c.; black sheets, No. 28 gage, 4.75c.; galvanized sheets, No. 28 gage, 5.85c.; square twisted and deformed steel bars, 3.22c.; structural shapes, 3.32c.; diamond pattern plates, ¼ in., 5.30c.; ½ in., 5.50c.; spring steel, 5c.; round cold-rolled steel, 4.15c.; squares and hexagons, cold-rolled steel, 4.65c.; steel hoops, 1 in. and wider, No. 20 gage and heavier, 4.10c.; narrower than 1 in., all gages, 4.60c.; steel bands, No. 12 gage to ¼ in., inclusive, 3.97c.; rails, 4.35c.; tool steel, 8.50c.; Norway iron, 7c.

## Cleveland

### Automobile Demand Increases Slowly—Pig Iron More Active

CLEVELAND, Aug. 12.—The volume of business in finished steel shows a little gain from week to week in the number and size of orders, and some inquiries have come out for fourth quarter contracts, but mills are not inclined to make commitments for that delivery unless consumers have orders that will make it reasonably certain that they will take the steel. Considerable demand has sprung up for forging bars, inquiries including one for 1000 tons. Some of the larger consumers are still looking for lower prices and it is believed that a further concession to 2c. would bring out a large tonnage of steel bars from bolt and nut manufacturers and other consumers whose stocks are below normal. Although Detroit automobile companies have been buying some steel recently, the expected increase in car production over July has not yet materialized. The demand for structural steel in this territory has quieted down, although an Ohio fabricator during the week received several inquiries aggregating 6000 tons for railroad bridge work. Detroit will come in the market shortly for 5000 tons of structural steel for a municipal lighting plant, having decided because of favorable prices to go ahead with this project this year instead of waiting until next year, as had been contemplated. Prices show practically no change. There are reports of weakening on steel bars to 2.10c., but most of the leading mills are holding firmly to 2.15c. for both steel bars and structural shapes. Plates have settled down to a common 2c. basis, although 1.90c. is coming out occasionally. Few mills are now asking 2.10c. except for less than car lots. Hot-rolled steel continues irregular, with several mills quoting net prices. On wide strip the range is from 2.15c. to 2.50c., and hoops and bands are quoted up to 2.65c. On cold-rolled strip 4c. has become the common price except for small lots.

Jobbers quote steel bars, 3.11c.; plates and structural shapes, 3.21c.; No. 28 black sheets, 4.35c.; No. 28 galvanized sheets, 5.45c.; No. 10 blue annealed sheets, 3.45c. to 3.76c.; cold-rolled rounds, 4c.; flats, squares and hexagons, 4.50c.; hoops and bands, 1 in. and wider and 20 gage or heavier, 3.86c.; narrower than 1 in. or lighter than No. 20 gage, 4.36c.; No. 9 annealed wire, \$3.30 per 100 lb.; No. 9 galvanized wire, \$3.75 per 100 lb.; common wire nails, \$3.40 base per 100 lb.

**Pig Iron.**—The market continues fairly active, with sales aggregating approximately 25,000 tons by Cleveland interests during the week. Fair sized lots were placed by manufacturers of stoves and other heating equipment in the Michigan territory and several thousand tons were bought by Erie, Pa., consumers, the latter business going to Buffalo furnaces. Very little new business is coming from the automobile industry, although orders from that field have increased somewhat. Sales include a 2000-ton lot to a Hamilton, Ohio, consumer by a southern Ohio furnace and a 1000-ton lot placed with local furnaces by a Cleveland jobbing foundry. Some consumers already partly covered for the remainder of the year have decided to buy what additional iron they need as wanted. While prices show a firmer tendency, only one producer in

this territory has so far made an advance. This interest is now holding to \$19.50, Valley, for foundry and malleable iron for shipment to consumers that usually buy iron on the Valley basis. The Lake furnace price remains at \$19 and the shading from this price that has been prevalent for some time seems to have disappeared. In Cleveland the price for local delivery is unchanged at \$20. In the Michigan territory outside of Detroit, \$19 is still the ruling price. Small lot sales of Tennessee foundry iron are reported at \$17.50, with \$18 quoted for Alabama iron. A local interest is now holding to \$27.50, Valley furnace, for low phosphorus iron.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a \$3.02 freight rate from Jackson and \$6 rate from Birmingham:

Basic, Valley furnace.....	\$19.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25	20.50
Southern fdy., sil. 1.75 to 2.25...	\$23.50 to 24.00
Malleable .....	20.50
Ohio silvery, 8 per cent.....	33.52
Stand low phos., Valley furnace..	27.50 to 28.00

**Semi-finished Steel.**—Specifications on sheet bars are fair, but no business is reported in any form of semi-finished steel. A local producer is holding to \$38 for sheet bars, but there are unconfirmed reports of these being offered at \$37. There has been no further test of slab prices, which are being held locally at \$38, although the last sale reported was around \$35, Youngstown.

**Iron Ore.**—Lake Superior ore on Lake Erie docks Aug. 1 amounted to 5,753,794 gross tons as compared with 5,307,952 tons on July 1 and with 4,956,705 tons on Aug. 1 last year. Receipts at Lake Erie ports during July were 5,430,561 tons as compared with 7,682,275 tons in July last year and shipments from these ports for the season until Aug. 1 were 15,210,137 tons as compared with 19,119,757 tons during the corresponding period last year. Shipments from Lake Erie ports during July were 3,835,870 tons as compared with 5,635,056 tons during July last year. Receipts at other than Lake Erie ports during July were 1,952,800 tons as compared with 2,428,129 tons during July last year. No inquiries for ore are pending and few sales are expected during the remainder of the season. A number of additional Lake boats have been tied up, making about 100 ore vessels now out of commission.

**Bolts, Nuts and Rivets.**—The demand for bolts and nuts is somewhat better than last month, as many consumers have placed orders for replenishing their stocks which had become low. While the market is firmer than a few weeks ago, prices below 60 and 20 per cent off list on large machine bolts have not disappeared. Rivets are quiet. Although lower prices are being quoted, the leading local manufacturer is still holding to 2.60c. for large rivets and has notified the trade of a possible advance.

**Alloy Steel.**—Alloy steel manufacturers, to meet the requirements of consumers for better billets, have adopted a change in the mill practice of rolling billets. Instead of finishing these with a single rolling, the practice hereafter will be to reroll alloy billets the same as bars and to chip out the surface defects after the first rolling. With this change, prices on alloy billets have been revised upward, the advance amounting to \$10 a ton on large billets. Instead of quoting 4 x 4-in. and larger billets at \$10 per gross ton less than the net ton price on bars for the same analysis, the \$10 differential is eliminated, the only differential now being in quoting a gross ton of billets at the same price as a net ton of bars. On billets smaller than 4 x 4-in., formerly sold at the net ton bar price, the net price is \$5 a ton above 4 x 4 billets of the same analysis.

**Reinforcing Bars.**—Inquiry for small lots for building and road work shows an improvement. Several inquiries for lots up to 200 tons or more are still pending and a new inquiry has come out for 500 tons for a building for the Columbus Railway Co. Prices are unchanged at 2.10c. to 2.15c. for billet steel bars and 1.90c. to 2c. for rail steel bars.

**Warehouse Business.**—Jobbers report an increase in sales over last month. Some consumers are still getting price concessions of \$2 a ton.

**Sheets.**—Automobile companies have been buying a little more freely, but demand from other sources is slow. Some inquiries have come out with the evident intention of sounding the market. Most of the larger mills are holding to 3.50c. for black sheets, at which most of the orders are being placed. However, this price is being shaded to 3.40c. and on two round lots including 1000 tons placed by a Cleveland manufacturer, quotations as low as 3.35c. appeared. On auto body sheets the 4.75c. price recently made to a Detroit automobile company has become general. Galvanized sheets have sold at 4.50c., but 4.60c. is more common and blue annealed sheets are fairly firm at 2.65c. to 2.70c.

**Old Material.**—A Steubenville steel plant came in the market during the week for blast furnace borings and turnings for which it is understood to have paid \$15 and it is reported to have purchased a considerable tonnage at that price. This was the only activity of importance during the week. Local mills are out of the market and dealers are not trying to force sales, as they are looking for a better demand and firmer prices a little later. Consequently not a great deal of scrap is being offered. Dealers are still adding to yard stocks. Prices are firm, the only change being a 25c. per ton reduction on machine shop turnings. The Chesapeake & Ohio Railroad will receive bids Aug. 18 for 6000 to 8000 tons of various grades of scrap, including 1500 tons of car wheels.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel.....	\$15.00 to \$15.50
Rolls for rolling.....	15.75 to 16.00
Rolls under 3 ft.....	16.25 to 16.75
Low phosphorus melting.....	17.50 to 17.75
Cast iron borings.....	14.00 to 14.50
Machine shop turnings.....	13.00 to 13.25
Mixed borings and short turnings	13.25 to 13.75
Compressed sheet steel.....	13.25 to 13.50
Railroad wrought .....	12.75 to 13.00
Railroad malleable .....	17.00 to 17.50
Light bundled sheet stampings..	12.00 to 12.50
Steel axle turnings.....	13.25 to 13.50
No. 1 cast.....	18.00 to 18.25
No. 1 busheling.....	12.75 to 13.00
Drop forge flashings.....	13.25 to 13.50
Railroad grate bars.....	13.25 to 13.50
Stove plate .....	13.25 to 13.50
Pipes and flues.....	11.00 to 11.25

Charles M. Schwab, chairman of directors of the Bethlehem Steel Corporation, has become chairman of directors of the Six Wheel Co. of Philadelphia, a corporation formed to manufacture a truck with six wheels which, it has been said, will revolutionize truck and coach manufacturing. Its chief benefits are said to lie in the increased power which obtains from four-wheel traction together with a reduction of one-fourth in road impact.

Operations on Mississauga Exploration & Development property at Mileage 68, Algoma Central, a short distance from Sault Ste. Marie, Ont., have revealed loadstone. This magnetic iron has been found across 40 ft. in a 300-ft. vein, and occurred through a half-mile stretch. Mississauga Forest Reserve is one of the few places where loadstone has been found in this country. It is expected that samples from the Mississauga claims will assay as high as 70 per cent.

The second of a series of "minute" booklets on Buying Babbitt Metals has just been issued by the makers of Syracuse Babbitts. The first booklet treats of the subject "so much of this, so much of that and so much of something else." The subject of the second is "Buying Babbitts and Coffee." The subjects are seriously treated, though written entertainingly. Copies of these may be had by writing to the United American Metals Corporation, 196 Diamond Street, Brooklyn, N. Y.

### Canadian Old Material Market

TORONTO, ONT., Aug. 11.—While demand for iron and steel scrap commodities in the Canadian market continues weak, a more optimistic sentiment is gradually making its appearance and it is the opinion of some of the principal selling interests that business will take a turn for the better within the next month or six weeks. One Hamilton, Ont., consumer is asking for iron and steel scrap in fairly large tonnages, and the Steel Co. of Canada, Hamilton, is accepting regular deliveries of heavy melting steel and turnings, orders for which are mostly against old contracts. The demand for heavy melting steel is being maintained at a fairly good level; wrought pipe is moving in small quantities only; the railroads are throwing but little scrap on the market and while yards are fairly well stocked with old rails and other lines of scrap, there is only a very limited demand for these commodities. Steel and wrought iron axles have shown some improvement of late, but actual sales are much below expectations. Increased activities among foundries throughout Eastern Canada have not become as prominent as was expected a few weeks ago and it is reported that in practically all cases the daily melt remains about the same as six weeks or two months ago. Melters are not showing much interest in scrap requirements, but are buying for immediate requirements only. Stock holdings by foundries have almost entirely disappeared, but despite this fact consumer buying for stock purposes or future use has not improved. The demand for machinery cast is limited to small tonnages for spot delivery; malleable scrap and stove plate are quiet; a few orders for standard car wheel made their appearance during the week. The recent reduction in prices has failed to stimulate buying, but it is now the opinion of local dealers that further reductions are not to be expected. Dealers' buying prices are as follows:

	Gross Tons	
	Toronto	Montreal
Steel turnings .....	\$8.00	\$8.00
Machine shop turnings .....	9.00	7.00
Wrought pipe .....	6.00	7.00
Rails .....	10.00	12.00
No. 1 wrought scrap .....	10.00	11.00
Heavy melting steel .....	10.00	10.50
Steel axles .....	14.00	18.00
Axles, wrought iron .....	17.00	20.00
	Net Tons	
Standard car wheels .....	13.00	14.00
Malleable scrap .....	13.00	14.00
Stove plate .....	12.00	13.00
No. 1 machinery cast .....	17.00	18.00

### Detroit Scrap Prices Stronger

DETROIT, Aug. 12.—Prices are stronger in several lines of scrap and, while the current turnover is not large, melters are finding it increasingly difficult to cover their immediate requirements. In part this is accounted for by the increased consumption, coupled with the fact that, as many of the motor companies have been building cars from banks of machined castings for several months, the production of scrap has been relatively low. It is also true that dealers have been active in the Michigan markets, covering against sales made several weeks ago, while those who have stocks on their yards are inclined to hold, being encouraged by the improved tone of the iron markets. Machinery cast has been scarce and several have either turned to a lower-priced material or are using a larger proportion of pig iron in their mixture.

The following prices are quoted on a gross ton basis f.o.b. cars producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting steel .....	\$14.50 to \$15.50
Shoveling steel .....	13.00 to 14.00
Borings .....	11.50 to 12.50
Short turnings .....	12.00 to 13.00
Long turnings .....	10.00 to 11.00
No. 1 machinery cast .....	16.00 to 17.00
Automobile cast .....	16.50 to 18.00
Hydraulic compressed .....	11.50 to 12.75
Stove plate .....	13.50 to 14.50
No. 1 busheling .....	12.00 to 13.00
Sheet clippings .....	8.00 to 9.00
Flashings .....	10.50 to 11.50

### Bethlehem Steel Co. Not Negotiating for Pittsburgh Steel Co.

PITTSBURGH, Aug. 12.—The report has been persistent here the past few days that the Bethlehem Steel Co. again was negotiating for the purchase of the Pittsburgh Steel Co., but D. P. Bennett, president of the latter, says that the report is without foundation. About two years ago when a number of other steel company mergers were under negotiation, it was reported that Charles M. Schwab, acting for the Bethlehem Steel Co., was negotiating for the Pittsburgh Steel Co. At that time, a difference of opinion as to the value of the shares of the latter which could not be bridged terminated the negotiation. Since that time, the Bethlehem Steel Co. has acquired the Midvale Steel & Ordnance Co., and as there is a rod and wire mill at the Johnstown, Pa., plant, there is some surprise that the Bethlehem Steel Co. should again be mentioned in the latest reports as the possible purchaser of the Pittsburgh Steel Co.

### Perry Iron Co. Will Build By-Product Coke Plant

The Perry Iron Co., Erie, Pa., controlled by Pickands, Mather & Co., Cleveland, will place contracts shortly for a by-product coke plant of 30 ovens with a daily capacity of 400 tons of coke. The coke will be used by the Perry furnace.

The Perry Iron Co. has closed a contract with the Pennsylvania Gas Co., Oil City, Pa., under the terms of which it will supply the gas company with 4,000,000 cu. ft. of by-product gas daily from its coke plant. The gas company will erect at Erie gas holders, purifying and mixing plants, and compressing stations for the blending of natural and artificial gas. It is estimated that the entire project will cost close to \$5,000,000.

### Receivers Appointed for Cyclops Steel Co.

C. S. McHall, Philadelphia, and D. J. McLaughlin, Pittsburgh, have been appointed receivers of the Cyclops Steel Co., Pershing Square, New York, by the Federal District Court at Pittsburgh. The action was taken on a petition of Earl Harrison, Philadelphia, claiming to be holder of a note for \$10,000 against the company, which he declares would be lost if execution on a judgment in Crawford County, Pennsylvania, is permitted.

The company has a plant in Titusville, Pa., and manufactures high-speed tool steel. On June 30, last, the assets were listed as \$1,342,413 and liabilities of \$320,065. The company has been under the management of Herman D. and Carl F. Boker, Jr., of New York, since 1916.

### Proposed Freight Rates on Cast Iron Pipe

BIRMINGHAM, ALA., Aug. 12.—Looking to a new rate structure on cast iron pipe from various points of production in the Southern territory, another conference was held this week in Atlanta by cast iron pipe interests of this section with the general advisory committee of the fourth section board of Southern carriers. An amicable agreement was reached on pipe rates to points in the Southern territory, Ohio River crossings and eastern and interior eastern points, including the Virginia cities. Necessity for a revision of the rates on cast iron pipe is seen in the revisions which are taking place in the class rates as well as the rates on other special iron articles.

The locomotive shops of the Delaware & Hudson Railroad, at Colonie, N. Y., have worked 1,000,000 man hours since April 21 without a person being injured, according to a report made public Aug. 5. The shops employ 1000 men. In the car department, where there are half that number, there has not been a reportable injury since March 7. In July, only five men were injured on the whole D. & H. system and none were killed.

# Prices Finished Iron and Steel f.o.b. Pittsburgh

Carload Lots

## Plates

Sheared, tank quality, base, per lb.....2c. to 2.10c.

## Structural Materials

Beams, channels, etc., base, per lb.....2c. to 2.15c.  
Sheet piling .....2.10c. to 2.25c.

## Iron and Steel Bars

Soft steel bars, base, per lb.....2.15c.  
Soft steel bars for cold finishing.....\$3 per ton over base  
Reinforcing steel bars, base.....2.15c.  
Refined iron bars, base, per lb.....3c.  
Double refined iron bars, base, per lb.....4.50c. to 4.75c.  
Stay bolt iron bars, base, per lb.....6.50c. to 7.00c.

## Hot-Rolled Flats

Hoops, base, per lb.....2.60c.  
Bands, base, per lb.....2.60c.  
Strips, base, per lb.....2.40c. to 2.50c.

## Cold-Finished Steel

Bars and shafting, drawn or rolled, base, per lb.....2.80c.  
Bars and shafting, drawn or rolled, l.c.l. per lb.....3.05c.  
Shafting, turned and polished, base, per lb.....2.80c.  
Bars, S. A. E. Series, No. 2100.....4.50 to 4.75c.  
Bars, S. A. E. Series, No. 2300.....6.00c. to 6.25c.  
Bars, S. A. E. Series, No. 3100.....5.00c. to 5.25c.  
Strips, base, per lb.....4.00c. to 4.25c.

## Wire Products

(To jobbers in car lots)

Nails, base, per keg.....\$2.80 to \$2.85  
Galvanized nails, 1 in. and over.....\$2.25 over base  
Galvanized nails, less than 1 in.....2.50 over base  
Bright plain wire, base, No. 9 gage, per 100 lb. 2.55 to \$2.60  
Annealed fence wire, base, per 100 lb.....2.70 to 2.75  
Spring wire, base, per 100 lb.....3.60  
Galvanized wire No. 9, base, per 100 lb.....3.15 to 3.20  
Galvanized barbed, base, per 100 lb.....3.50 to 3.55  
Galvanized staples, base, per keg.....3.50 to 3.55  
Painted barbed wire, base, per 100 lb.....3.25 to 3.30  
Polished staples, base, per keg.....3.25 to 3.30  
Cement coated nails, base, per count keg.....2.20 to 2.25  
Woven fence (to jobbers) 726-12½-12, per 100 rods....18.70  
Woven fence (to retailers) 726-12½-12, per 100 rods....20.03  
Bale ties, carloads to jobbers...75, 5, 5 and 2½ per cent off list

## Bolts and Nuts

Machine bolts, small rolled threads, 65, 10 and 10 per cent off list  
Machine bolts, all sizes, cut threads...65 and 10 per cent off list  
Carriage bolts, ½ x 6 in.:  
Smaller and shorter, rolled threads, 65 and 10 per cent off list  
Carriage bolts, cut threads, all sizes.....65 per cent off list  
Eagle carriage bolts.....65, 10 and 10 off list  
Lag bolts.....70 and 10 per cent off list  
Plow bolts, Nos. 1, 2 and 3 heads.....50 and 10 per cent off list  
Other style heads.....20 per cent extra  
Machine bolts, c.p.c. and t. nuts, ½ x 4 in., 50, 10 and 10 per cent off list  
Larger and longer sizes.....50, 10 and 10 per cent off list  
Hot pressed nuts, blank or tapped, square...4.80c. to 5c. off list  
Hot pressed nuts, blank or tapped, hexagons...5c. to 5.30c. off list  
C.p.c. and t. square or hex nuts, blank or tapped 4.50c. to 4.85c. off list  
Semi-finished hex nuts:  
½ in. and smaller, U. S. S.....80, 10 and 5 per cent off list  
¾ in. and larger, U. S. S.....75, 10 and 5 per cent off list  
Small sizes, S. A. E.....80, 10, 10 and 5 per cent off list  
S. A. E., ½ in. and larger.....75, 10 and 5 per cent off list  
Stove bolts in packages.....80, 10 and 5 per cent off list  
Stove bolts in bulk.....80, 10, 5 and 2½ per cent off list  
Tire bolts.....60 and 10 per cent off list  
Bolt ends with hot pressed nuts.....60 and 5 per cent off list  
Bolt ends with cold pressed nuts.....50 and 5 per cent off list  
Turnbuckles, with ends, ½ in. and smaller, 55 and 5 per cent off list  
Turnbuckles, without ends, ½ in. and smaller, 70 and 10 per cent off list  
Washers.....5.75c. to 6.00c.  
Lock washers.....80 per cent off list

## Semi-Finished Castellated and Slotted Nuts

(To jobbers and consumers in large quantities f.o.b. Pittsburgh.)

Per 1000			Per 1000		
1/4-in.	S. A. E.	U. S. S.	1/4-in.	S. A. E.	U. S. S.
.....	\$4.25	\$4.25	1/2-in.	\$13.25	\$13.50
1/2-in.	4.90	4.90	3/4-in.	16.25	16.50
3/4-in.	5.90	6.25	1-in.	22.50	23.00
1-in.	7.50	8.50	1 1/4-in.	34.00	34.00
1 1/4-in.	9.75	10.00	1 1/2-in.	53.00	55.00

Larger sizes—Prices on application.

## Cap and Set Screws

Milled hex. head cap screws.....75, 10 and 5 per cent off list  
Milled standard set screws, case hardened, 75, 10 and 5 per cent off list  
Milled headless set screws, cut thread, 75, 10 and 5 per cent off list  
Upset hex. head cap screws, U. S. S. thread, 80, 10 and 10 per cent off list  
Upset hex. head cap screws, S. A. E. thread, 80, 10 and 10 per cent off list  
Milled studs.....65 and 10 per cent off list

## Rivets

Large structural and ship rivets, base, per 100lb. \$2.50 to \$2.60  
Small rivets.....70, 10 and 5 per cent off list

## Track Equipment

Spikes, ½ in. and larger, base, per 100 lb.....\$2.80  
Spikes, ½ in. and smaller, base, per 100 lb.....3.25  
Spikes, boat and barge, base, per 100 lb.....3.25  
Track bolts, all sizes, base, per 100 lb.....3.75  
Track bolts, heat-treated, base, per 100 lb.....4.25  
Tie plates, per 100 lb.....2.50  
Angle bars, base, per 100 lb.....2.75

## Welded Pipe

### Butt Weld

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
1/4	45	19 1/2	1/4 to 3/8	+11	+39
1/4 to 3/8	51	25 1/2	3/8	22	2
1/2	56	42 1/2	1/2	28	11
3/4	60	48 1/2	1 to 1 1/2	30	13
1 to 3	62	50 1/2			

### Lap Weld

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
2	55	43 1/2	2	23	7
2 1/2 to 6	59	47 1/2	2 1/2	26	11
7 and 8	56	43 1/2	3 to 6	28	13
9 and 10	54	41 1/2	7 to 12	26	11
11 and 12	53	40 1/2			

### Butt Weld, extra strong, plain ends

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
1/4	41	24 1/2	2 to 3	61	50 1/2
1/4 to 3/8	47	30 1/2	3/8 to 1 1/2	+1	+54
1/2	53	42 1/2	1 1/2	21	7
3/4	58	47 1/2	2	28	12
1 to 1 1/2	60	49 1/2	1 to 1 1/2	30	14

### Lap Weld, extra strong, plain ends

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
2	53	42	2	23	9
2 1/2 to 4	57	46 1/2	2 1/2 to 4	29	15
4 1/2 to 6	56	45 1/2	4 1/2 to 6	28	14
7 to 8	52	39 1/2	7 to 8	21	7
9 and 10	45	32 1/2	9 to 12	16	2
11 and 12	44	31 1/2			

To the large jobbing trade the above discounts are increased by one point, with supplementary discount of 5 per cent on black and 1½ points, with a supplementary discount of 5 per cent on galvanized.

## Boiler Tubes

Lap Welded Steel		Charcoal Iron	
Inches	Black	Inches	Black
2 to 2 1/4 in.	27	1 1/2 in.	+18
2 1/2 to 3 in.	37	1 1/2 to 1 3/4 in.	+8
3 in.	40	2 to 2 1/4 in.	—2
3 1/4 to 3 3/4 in.	42 1/2	2 1/2 to 3 in.	—7
4 to 13 in.	46	3 1/4 to 4 1/2 in.	—9

### Standard Commercial Seamless Boiler Tubes

Cold Drawn		Hot Rolled	
Inches	Black	Inches	Black
1 in.	55	3 and 3 1/4 in.	36
1 1/4 and 1 1/2 in.	47	3 1/2 and 3 3/4 in.	37
1 3/4 in.	31	4 in.	41
2 and 2 1/4 in.	22	4 1/2 in. and 5 in.	33
2 1/2 and 2 3/4 in.	32		

### Hot Rolled

3 and 3 1/4 in.....38  
3 1/2 in. and 3 3/4 in.....39

Less carloads, 4 points less. Add \$8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

### Seamless Mechanical Tubing

Carbon under 0.30 base.....\$7 per cent off list  
Carbon 0.30 to 0.40, base.....85 per cent off list  
Plus usual differentials and extras for cutting. Warehouse discounts range higher.

### Seamless Locomotive and Superheater Tubes

Cents per Ft.		Cents per Ft.	
Inches	Black	Inches	Black
2-in. O.D. 12 gage....	15	2 1/4-in. O.D. 10 gage....	20
2-in. O.D. 11 gage....	16	3-in. O.D. 7 gage....	35
2-in. O.D. 10 gage....	17	1 1/2-in. O.D. 9 gage....	15
2 1/4-in. O.D. 12 gage....	17	5 1/2-in. O.D. 9 gage....	55
2 1/4-in. O.D. 11 gage....	18	5 1/2-in. O.D. 9 gage....	57

## Tin Plate

Standard cokes, per base box.....\$5.50

## Terne Plate

(Per Package, 20 x 28 in.)

8-lb coating, 100 lb.		20-lb. coating I. C.....	
base.....	\$11.00	25-lb. coating I. C.....	16.20
8-lb. coating I. C.....	11.30	30-lb. coating I. C.....	17.35
12-lb. coating I. C.....	12.70	35-lb. coating I. C.....	18.35
15-lb. coating I. C.....	13.95	40-lb. coating I. C.....	19.35

## Sheets

### Blue Annealed

Nos. 9 and 10 (base), per lb.....2.60c. to 2.70c.

### Box Annealed, One Pass Cold Rolled

No. 28 (base), per lb.....3.40c. to 3.50c.

### Automobile Sheets

Regular auto body sheets, base (22 gage), per lb.....4.75c.

### Galvanized

No. 28 (base), per lb.....4.50c. to 4.60c.

### Long Ternes

No. 28 gage (base), 8-lb. coating, per lb.....4.95c. to 5c.

### Tin-Mill Black Plate

No. 28 (base), per lb.....3.50c.

# Prices of Raw Materials, Semi-Finished and Finished Products

## Ores

Lake Superior Ores, Delivered Lower Lake Ports	
Old range Bessemer, 55 per cent iron .....	\$5.65
Old range non-Bessemer, 51½ per cent iron.....	4.90
Mesabi Bessemer, 55 per cent iron.....	5.40
Mesabi non-Bessemer, 51½ per cent iron.....	4.75
Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore	
Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian.....	9.00c. to 9.50c.
Iron ore, Swedish, average 66 per cent iron.....	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus, nominal.....	45c.
Manganese ore, ordinary, 48 per cent manganese, from the Caucasus.....	42c.
Manganese ore, Brazilian or Indian, nominal concentrates .....	42c.
Tungsten ore, per unit, in 60 per cent concentrates .....	\$8.75 to \$10.00
Chrome ore, basic, 48 per cent Cr <sub>2</sub> O <sub>3</sub> , crude, per ton, c.i.f. Atlantic seaboard.....	19.00 to 22.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS <sub>3</sub> , New York.....	75c. to 85c.

## Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton.....	\$99.00
Ferromanganese, British, 80 per cent f.o.b. Atlantic port, duty paid.....	100.00
Ferrosilicon, 50 per cent, delivered.....	\$72.00 to 75.00
Ferrosilicon, 75 per cent.....	140.00
Ferrotungsten, per lb. contained metal.....	90c. to 93c.
Ferrochromium, 4 to 6 per cent carbon, 60 to 70 per cent Cr. per lb. contained Cr. delivered .....	10.75c.
Ferrochromium, 6 to 7 per cent carbon, 60 to 70 per cent Cr., per lb.....	10.50c.
Ferrovandium, per lb. contained vanadium .....	\$3.50 to \$4.00
Ferrocobaltitanium, 15 to 18 per cent, per net ton .....	200.00

## Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)	
Spiegeleisen, domestic, 19 to 21 per cent.....	\$33.00 to \$34.00
Spiegeleisen, domestic, 16 to 19 per cent.....	32.00 to 33.00
Ferrosilicon, Bessemer, 10 per cent, \$39.50; 11 per cent, \$42; 12 per cent, \$44.50; 14 to 16 per cent (electric furnace), \$36.00.	
Silvery iron, 5 per cent, \$27.00; 6 per cent, \$28.00; 7 per cent, \$29.00; 8 per cent, \$30.50; 9 per cent, \$32.50; 10 per cent, \$34.50; 11 per cent, \$37.00; 12 per cent, \$39.50.	

## Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines....	\$18.00 to \$19.00
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines....	19.00 to 20.00
Per 1000 f.o.b. works:	
Fire Clay:	
Pennsylvania .....	High Duty \$40.00 to \$43.00 Moderate Duty \$36.00 to \$40.00
Maryland .....	45.00 to 47.00 40.00 to 42.00
Ohio .....	40.00 to 43.00 37.00 to 39.00
Kentucky .....	42.00 to 43.00 37.00 to 39.00
Illinois .....	37.00 to 42.00
Missouri .....	42.00 to 45.00 35.00 to 40.00
Ground fire clay, per net ton.....	6.00 to 7.00
Silica Brick:	
Pennsylvania .....	35.00 to 38.00
Chicago .....	47.00
Birmingham .....	50.00
Ground silica clay, per net ton.....	7.50 to 8.00
Magnesite Brick:	
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.).....	65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.).....	40.00
Chrome Brick:	
Standard size, per net ton.....	45.00

## Semi-Finished Steel, F.O.B. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over.....	\$38.00
Rolling billets, 2-in. and under.....	38.00
Forging billets, ordinary carbons.....	43.00
Sheet bars, Bessemer.....	38.00
Sheet bars, open-hearth.....	38.00
Slabs .....	38.00
Wire rods, common soft, base, No. 5 to ¼-in....	46.00 to 48.00
Wire rods, common soft, coarser than ¼-in....	\$2.50 over base
Wire rods, screw stock.....	\$5.00 per ton over base
Wire rods, carbon, 0.20 to 0.40.....	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55.....	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75.....	7.50 per ton over base
Wire rods, carbon over 0.75.....	10.00 per ton over base
Wire rods, acid .....	15.00 per ton over base
Skelp, grooved, per lb.....	2c. to 2.10c.
Skelp, sheared, per lb.....	2c. to 2.10c.
Skelp, universal, per lb.....	2c. to 2.10c.

## Finished Iron and Steel, F.O.B. Mill

Rails, heavy, per gross ton.....	\$43.00
Rails, light, new steel, base, lb.....	1.85c. to 1.90c.
Rails, light, rail steel, base, per lb.....	1.65c. to 1.75c.
Bars, common iron, base, per lb., Chicago mill .....	2.20c.
Bars, common iron, Pittsburgh mill.....	2.40c.
Bars, rail steel reinforcing, base, per lb....	2.10c. to 2.15c.
Rail steel bars, base, per lb., Chicago mill....	2.10c.
Cold-finished steel bars, base, Chicago, per lb .....	2.80c.
Ground shafting, base, per lb.....	3.20c.
Cut nails, base, per keg.....	\$2.90

## Alloy Steel

S. A. E. Series Numbers	Bars 100 lb.
2100* (½% Nickel, 10 to 20 per cent Carbon) ..	\$3.25 to \$3.50
2300 (¾% Nickel) .....	4.75
2500 (5% Nickel) .....	6.00 to 6.50
3100 (Nickel Chromium) .....	3.75
3200 (Nickel Chromium) .....	5.50 to 5.75
3300 (Nickel Chromium) .....	8.00
3400 (Nickel Chromium) .....	6.50 to 7.00
5100 (Chromium Steel) .....	3.35 to 3.75
5200* (Chromium Steel) .....	7.50 to 8.00
6100 (Chromium Vanadium bars) .....	4.50
6100 (Chromium Vanadium spring steel).....	4.25 to 4.50
9250 (Silicon Manganese spring steel).....	3.50 to 3.75
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium).....	4.25 to 4.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum).....	4.35 to 4.50
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum).....	3.95 to 4.25
Chromium Molybdenum spring steel (1—1.35 Chromium, 0.30—0.50 Molybdenum) .....	4.75 to 5.00
Above prices are for hot-rolled steel bars, forging quality, per 100-lb., f.o.b. Pittsburgh. For billets 4 x 4 to 10 x 10-in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4-in. down to and including 2½-in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.	

\*Not S.A.E. specifications, but numbered by manufacturers to conform to S.A.E. system.

## Freight Rates

All rail freight rates from Pittsburgh on finished iron and steel products, carload lots, 36,000 lb. minimum carload, per 100 lb:

Philadelphia, domestic.....	\$0.32	Buffalo .....	\$0.265	St. Louis .....	\$0.43	*Pacific Coast .....	\$1.15
Philadelphia, export.....	0.235	**Cleveland .....	0.215	Kansas City .....	0.735	*Pac. Coast, ship plates ..	1.20
Baltimore, domestic.....	0.31	**Cleveland, Youngs-	0.19	Kansas City (pipe)....	0.705	Birmingham .....	0.55
Baltimore, export.....	0.225	town Comb. ....	0.29	St. Paul .....	0.60	Memphis .....	0.56
New York, domestic.....	0.34	Detroit .....	0.29	Omaha .....	0.735	Jacksonville, all rail... ..	0.70
New York, export.....	0.255	Cincinnati .....	0.29	Omaha .....	0.705	Jacksonville, rail and	0.415
Boston, domestic.....	0.365	Indianapolis .....	0.31	*Denver .....	1.15	water .....	
Boston, export.....	0.255	Chicago .....	0.34	†Denver (pipe) .....	1.17	New Orleans .....	0.87

\*Applies minimum carload 80,000 lb. \*\*There will be no official change until Sept. 1, but, as for some time, the 19c. rate prevails. †Minimum loading 46,000 lb.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 35c.; ship plates, 40c.; ingots and muck bars, structural steel, common wire products, including cut or wire nails, spikes, and wire hoops, 40c.; sheets and tin plates, 40c.; sheets, No. 12 gage and lighter, 50c.; rods, 40c.; wire rope cables and strands, 45c.; wire fencing, netting and stretcher, 40c.; pipes not over 12 in. in diameter, 55c.; over 12 in. in diameter, 2½c. per in. or fraction thereof additional. All rates per 100 lb. in carload lots, minimum 36,000 lb.

## NON-FERROUS METALS

### The Week's Prices

Cents per Pound for Early Delivery

Aug.	Copper, New York		Straits Tin (Spot)		Lead		Zinc	
	Lake	Electro-lytic*	New York	New York	St. Louis	New York	St. Louis	
6.....	13.37½	13.12½	51.75	7.70	7.40	6.52½	6.17½	
7.....	13.37½	13.12½	52.25	7.75	7.45	6.50	6.15	
8.....	13.50	13.25	52.12½	7.75	7.50	6.42½	6.07½	
9.....	13.62½	13.37½	....	7.75	7.50	6.45	6.10	
11.....	13.75	13.37½	51.87½	7.75	7.50	6.52½	6.17½	
12.....	13.75	13.37½	51.62½	7.87½	7.60	6.52½	6.17½	

\*Refinery quotation; delivered price ¼c. higher.

### New York

NEW YORK, Aug. 12.

Fair activity is the rule in most of the markets. Buying of copper continues steady and prices are advancing. Demand for tin is largely speculative and quotations are higher. The lead market has also advanced on fairly good demand and zinc, after a slight reaction, has resumed its upward trend.

**Copper.**—All sellers report a fairly large and steady demand for copper, both for domestic and foreign consumption. An encouraging feature is that buying is not spasmodic. The trend of the market during the past week has been slowly but steadily upward, and today electrolytic copper, in limited amounts, is quoted at a minimum of 13.62½c., delivered, with some sellers out of the market entirely or asking as high as 13.87½c. There are predictions of 14c. metal before the month is over. An interesting fact is that statistics show that exports for the first five months of this year are larger than for any corresponding five months in the last four years, the total having been over 200,000 tons to June 1, as compared with about 103,000 tons to June 1, 1921, the lowest of the four periods.

**Tin.**—The Straits tin market in the last week has hovered close to the 52c. level, and it is the opinion of some importers and sellers that the market has reached its peak on this movement. They argue that the advance is largely sentimental and that it has discounted some of the favorable features. Recently one large dealer has been a seller. There is no market improvement in consumption of tin and transactions each day, which have not been large, have been mostly between dealers and speculators. Some believe that, a little later, deliveries will be larger and that there may be moderate buying. The most active day in the last week was Thursday, Aug. 7, when about 150 tons was sold. On the New York Metal Exchange 100 tons changed hands during the week. An important feature is that the London market continues to sag. Today spot standard is quoted at £250 15s., future standard £251 10s., and spot Straits £251 15s., with the Singapore quotation yesterday £255. These quotations are all about £5 to £6 per ton below those of a week ago. At the peak of the present movement spot standard tin was quoted at £259 5s. on Aug. 6. Only a moderate business was done today in the New York market, with spot Straits quoted at 51.62½c. Arrivals thus far this month have been 2200 tons, with 3405 tons reported afloat.

**Lead.**—The chief event of interest was an advance of the leading interest yesterday from its contract price of 7.50c. to 7.75c., New York. The outside market had already reached the higher level. Demand is not as heavy as it was, but continues steady. In the outside market the quotation today is 7.87½c., New York, or 7.60c., St. Louis.

**Zinc.**—The course of the market the past week has been almost parallel to that of the week before. A moderate reaction from the high price a week ago resulted in sales as low as 6.05c. to 6.10c., St. Louis, toward the end of the week, but since then higher prices have prevailed until today prime Western zinc for early delivery is quoted at 6.17½c., St. Louis, or 6.52½c., New York. There is not much domestic demand but fairly good foreign buying together with the

advance in the pound sterling has been the principal factor.

**Nickel.**—Shot and ingot nickel are quoted unchanged at 27c. to 32c. per lb., with electrolytic nickel held at 32c. by the leading producers.

**Antimony.**—Chinese metal for prompt and August delivery is quoted a little higher at 9.12½c. per lb., New York, duty paid, in wholesale lots.

**Aluminum.**—Virgin metal, 98 to 99 per cent pure, is quoted by importers at 26.50c. to 27c. per lb., duty paid, delivered.

**Old Metals.**—Business is active and the turnover would be much larger if it were not for the fact that dealers are endeavoring to hold, wherever possible, for higher prices. Dealers' selling prices are as follows:

Copper, heavy and crucible.....	13.00
Copper, heavy and wire.....	12.00
Copper, light and bottoms.....	11.25
Heavy machine composition.....	10.50
Brass, heavy .....	8.50
Brass, light .....	7.00
No. 1 red brass or composition turnings..	9.25
No. 1 yellow rod brass turnings.....	7.75
Lead, heavy .....	7.00
Lead, tea .....	5.75
Zinc .....	4.25
Cast aluminum .....	17.00
Sheet aluminum .....	17.00

### Chicago

AUG. 12.—Tin, lead and zinc have advanced in price on the strength of added buying and a better tone in the market which has arisen from progress made toward settlement of the reparations problem. The buying in tin has been less marked than in the other lines, and in the case of copper the market is marking time. More buying of old metals also has stimulated that market and prices have advanced. We quote in carload lots: Lake copper, 13.75c.; tin, 53c.; lead, 7.65c.; spelter, 6.25c.; antimony, 10.50c., in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 10.75c.; copper bottoms, 9.25c.; red brass, 8.25c.; yellow brass, 7.25c.; lead pipe, 6.50c.; zinc, 4c.; pewter, No. 1, 25c.; tin foil, 33c.; block tin, 36c.; all buying prices for less than carload lots.

### Preparing to Entertain Engineers

BIRMINGHAM, ALA., Aug. 12.—Members of the American Institute of Mining and Metallurgical Engineers on their annual inspection trip and meeting in Birmingham, Oct. 13-15, will be accorded a most hearty welcome and shown much attention in this district. A program of entertainment is now being prepared. Automobiles, special trains and other conveyances will be employed in carrying the visitors to the various industrial projects of the district. Several hours will be given to a study of cast iron pipe manufacture. One day is scheduled for the presentation of and discussion of papers on technical subjects and the other two days here will be devoted to visiting big industrial plants of the district. The Alabama Mining Institute, composed of the coal producers, is assisting in the preparation of the entertainment program. The mining and metallurgical engineers will go from here to Muscle Shoals.

In the current issue of its house organ, distributed to its sales offices and dealers, the General Fireproofing Co., Youngstown, stresses the advantages and merits of steel lumber construction for school house floors and partitions; steel tile floor construction for schools, and other features of fireproof construction in public buildings. The company states that what was considered fireproof ten years ago would not pass inspection today.

The August payroll at Youngstown will exceed that of July, the lowest in 22 months due to low operating rate of iron and steel plants. The July wage disbursement was \$5,567,494. Total distribution first seven months of the year is \$45,701,922. Bank withdrawals in July were \$60,730,273, compared with \$53,083,237 in June.

## PERSONAL

H. C. Thomas, formerly vice-president and assistant general manager of the United Alloy Steel Corporation, Canton, Ohio, which position he resigned last February, and for ten years previous to that time assistant superintendent of the Indiana Steel Co.'s plant at Gary Ind., has been appointed general manager of the plants of the Alan Wood Iron & Steel Co. at Swedeland, Pa., Ivy Rock, Pa., and Conshohocken, Pa. Richard G. Wood, L. Heckscher, William A. Cooper and John E. Mountain will retire from active control of operations. Mr. Thomas was an assistant metallurgist at the Ivy Rock plant before he resigned to go to Gary. He recently returned from an extensive foreign trip.

T. J. Bray, president Republic Iron & Steel Co., is in Mercy Hospital, Pittsburgh, having been taken ill Sunday while in that city.

S. F. Pryor, who will succeed Harry W. Goddard as chairman of the board of the Wickwire-Spencer Steel Corporation, if the plan of reorganization is carried through, as referred to on another page, is chairman of the executive committee of the Remington Arms Co. and is a director of the Air Reduction Co., Inc., American Brake Shoe & Foundry Co., American Ship & Commerce Co., Baldwin Locomotive Co., Nash Motors Co., Southern Wheel Co., William Cramp & Sons Ship & Engine Co., Merchants Shipbuilding Corporation, American Agricultural Chemical Co. and various other corporations. He has been vice-president of the Union Pacific Railroad, vice-president of the Simmons Hardware Co. in charge of the railroad supply department, and president of the Southern Wheel Co.

Frank C. Roberts, consulting engineer, Philadelphia, much of whose work has been in the design and construction of blast furnaces and of important industrial and power buildings, was given the honorary degree of doctor of engineering by Princeton University at its last commencement.

Dr. Ellwood Hendrick, internationally known for his articles on popular chemistry, has been appointed curator of the Chandler Chemical Museum, by trustees of Columbia University, to take effect Oct. 1.

David M. Averill has been appointed vice-president and general manager, and Earl G. Gunn, chief engineer of the Ajax Motors Co., Racine, Wis., the new organization formed by Charles W. Nash of Kenosha, Wis., to take over the management and operation of the former Mitchell Motors Co. plant in Racine.

James C. Pinney has resigned as dean of the college of engineering, Marquette University, Milwaukee, after seven years of service, to engage in private engineering practice in Milwaukee in affiliation with J. A. L. Waddell, bridge construction engineering authority, New York. Mr. Pinney was superintendent of bridges and buildings for the city of Milwaukee prior to engaging in university work. His successor as dean is F. C. French, consulting engineer, Lake City, Colo., a former major of engineers in the United States Army.

Guy H. Castle has taken offices with the Finished Die Castings Co., successor to the Burns, Prost Co., 2239 Herndon Street, Chicago, and has taken over the sales of the company's output of die castings, which he will handle in addition to other lines.

Paul Vokal, superintendent of the small tool department, Pratt & Whitney Co., Hartford, Conn., has retired. At a farewell dinner in his honor he was given a gold watch by 34 foremen who have served under him. Mr. Vokal will spend a year in California. His plans beyond that are indefinite.

Bryant H. Blood, for the past seven years general manager of the Pratt & Whitney Co., Hartford, Conn., a subsidiary of the Niles-Bement-Pond Co., has resigned. He is to remain with the company in an official capacity, but for the next month or more will rest at a White Mountain, N. H., resort.

Ralph F. Miller, formerly service engineer for the United Engineering & Foundry Co., Pittsburgh, has

been appointed chief engineer of the R. S. Newbold & Son Co., founder, Norristown, Pa.

Capt. Leonard A. Bonner, who has been sales manager at Pittsburgh for the Great Western Smelting & Refining Co., has been transferred to Philadelphia as sales manager for the new Federated Metals Corporation, in which the Great Western company is included. He is the son of James B. Bonner.

B. D. Quarrie has resigned as general manager and director of the Otis Steel Co., Cleveland. No appointment will be made to fill his place. He has been with the Otis company about two years and was previously general superintendent of the blast furnace and steel works of the American Steel & Wire Co. in Cleveland.

Thomas J. Rossiter has resigned as superintendent of the Salem, Ohio, plant of the American Steel & Wire Co. and has been succeeded by Robert C. Garrison, who has been assistant superintendent of the H. P. Works in Cleveland. Mr. Rossiter has been in poor health for some time. After his recovery he probably will re-enter the employ of the company in some other capacity.

Jay M. Amsden, who has been superintendent of the Hanna docks at Ashtabula, Ohio, has been made general superintendent of all the Hanna dock interests, including the Ohio & Western Pennsylvania Dock Co. and the Lower Lakes Dock Co., operating docks at Sandusky, Cleveland and Ashtabula, Ohio, and Erie, Pa.

Back from Europe, where he visited England and Continental countries, Charles S. Robinson, vice-president and general manager Youngstown Sheet & Tube Co., Youngstown, declares conditions are apparently growing better. Mr. Robinson states that Great Britain is encountering difficulties in connection with the payment of unemployment doles, many of the unemployed being disinclined to return to work, as the amount they would earn is little in excess of what they receive in doles.

J. L. Hastings, for 20 years connected with subsidiaries of the United States Steel Corporation, has taken the position of general purchasing agent of the Phelps-Dodge Corporation, 99 John Street, New York. Mr. Hastings was district purchasing agent in Chicago for the American Steel & Wire Co. for about 15 years and was connected in a similar capacity with the Federal Shipbuilding Co., Kearny, N. J., for about five years. He resigned his connection with the latter company to take an extended vacation in California, but an offer from the Phelps-Dodge Corporation brought him back into active business once more. About Oct. 1 the purchasing department of the company will be removed from New York to Douglas, Ariz., where a closer contact with the Phelps-Dodge plants can be maintained.

E. W. Goldschmidt has been appointed Eastern executive representative of the Wagner Electric Corporation, St. Louis, with headquarters in New York, and Alex. Miltenberger becomes Western executive representative with headquarters in San Francisco. Mr. Goldschmidt has been associated with the Wagner company for 23 years, the last 22 of which he has been district sales manager in New York. He is a graduate of Illinois University, class of '87.

W. G. Nevin has been appointed sales manager of the Landis Tool Co., Waynesboro, Pa., to succeed T. H. King, who recently resigned. Mr. Nevin has been actively connected with the Landis company for 22 years. In the early years he was employed in the engineering and manufacturing departments and for the past 12 years with the sales department, having represented the company in the Chicago and New York territories until recently, when he was engaged in special sales engineering work. He assumes his new duties Sept. 1.

Harley L. Smith, for the past 20 years superintendent of shops for the Walworth Mfg. Co., Kewanee, Ill., has severed his connection with the firm and assumed duties as general superintendent of Stanley G. Flagg & Co., Stowe, Pa., manufacturer of fittings.

Joseph J. Root, mechanical engineer with the Union Tank Car Co., New York, has been appointed assistant to the vice-president in the mechanical department.

T. D. Montgomery, formerly manager of the Eastern district, Cutler-Hammer Mfg. Co., Milwaukee, with

headquarters in New York, has been appointed assistant sales manager in charge of engineering sales. He is now located at the main office. A. H. Fleet, formerly manager of the specialty department at Milwaukee, has charge of the sale of all merchandising products. C. W. Yerger, formerly manager of the Boston office, becomes manager of the Eastern district, assuming the former duties of Mr. Montgomery, and J. M. Fernald will take Mr. Yerger's place as manager of the Boston office. J. U. Heuser, formerly of the Chicago office, will take charge of the new branch office in Milwaukee.

President Eugene G. Grace of the Bethlehem Steel Corporation returned last week from a month's vacation trip to England.

## OBITUARY

**FRANK M. BALDWIN**, president Baldwin Tool Works, Parkersburg, W. Va., died on Aug. 6 at Colorado Springs, Colo. He was born in Indianapolis 62 years ago.

**CHAUNCEY B. HERSHEY**, general manager Fitchburg Grinding Machine Co., Fitchburg, Mass., widely known in the metal trades and machine tool industries, died on Aug. 6 at his home in Whalom, Mass. Mr. Hershey was born 54 years ago. Burial was at Waynesboro, Pa., his former home.

**IRVING H. PAGE**, prominent manufacturer, died at Tolland, Mass., on Aug. 5, in his sixty-fifth year. He was president of the Stevens Arms & Tool Co., Stevens-Duryea Automobile Co., Page-Lewis Arms Co., Page Needle Co., Page Paper Box Co. and National Scales Co., all of Chicopee, Mass. Mr. Page also was a director in several banks and other industries in that district.

**CARL H. NORDFELT**, for many years turbine engineer with the General Electric Co., Lynn, Mass., died on Aug. 5, of heart trouble. Mr. Nordfelt was born in Sweden and inherited the title of baron from his father. He came to this country 23 years ago and made his home in Swampscott, Lynn.

**EDWIN S. MOLDENHAUER**, vice-president and general manager Milwaukee Die Casting Co., Milwaukee, died on Aug. 4 after a brief illness with heart trouble. He was 50 years of age and a native of Wisconsin.

**FREDERICK BOGENBERGER**, an active figure in the sheet metal industry, and president of the Consolidated Sheet Metal Works, Milwaukee, died on Aug. 4, aged 61 years.

### Youngstown Fabricators Fairly Busy

**YOUNGSTOWN, Aug. 12.**—While there has been some recession in the activities of fabricating interests in the Youngstown district, production with such interests is averaging 85 per cent. The Truscon Steel Co. is maintaining its original plant at Youngstown at 80 per cent, and additional capacity, completed this summer, at 50 to 60 per cent.

The General Fireproofing Co. is operating at an average rate of 80 to 85 per cent, with prospects for heavy fall business.

The Youngstown Tank & Boiler Co. is averaging 75 per cent.

"Permanent Magnets" is the title of a new booklet issued by D. K. Bullens Co., Pottstown, Pa. It represents what is claimed to be the first attempt to standardize magnets for radio purposes. The magnets are hot forged. The booklet is written by the president of the company, D. K. Bullens, well known in the field of heat treatment of steel.

The Delaware River Steel Co., Chester, Pa., is planning various improvements to its blast furnace plant, including the installation of a skip hoist, furnace top and the erection of trestles and bins. Contracts for this work will probably be placed shortly.

### Operations Slowly Gaining in the Mahoning Valley

**YOUNGSTOWN, Aug. 12.**—In the Mahoning Valley, schedules of iron and steel properties are on a moderately broadening basis. With 31 of 52 open-hearth furnaces melting, steel ingot production is at the best rate in four months. Of 120 sheet and jobbing mills, 72 were operating Monday, comparing with 69 last week. The sheet mill schedule is also the best in several months. The Republic Iron & Steel Co. has added another pipe mill to its active units, making a total of 13 active, of 17 in the Valley.

A significant action is that of the Youngstown Sheet & Tube Co. in preparing the steel plant at its Brier Hill works for operation, after two months' idleness.

The Bessemer departments of the Sheet & Tube and the Carnegie Steel companies are in commission, but that of the Republic Iron & Steel Co. is down for repairs. Ingot capacity of the Trumbull Steel Co. and the Sharon Steel Hoop Co. is being operated in excess of 80 per cent, but Republic is at less than 50 per cent.

The Carnegie company is operating its steel department at the Ohio works at 60 per cent, and its bar mills in the Youngstown district at 80 per cent.

Among the non-integrated sheet rollers, the Newton Steel Co. has eight mills under power; the Mahoning Valley Steel Co., six; the Falcon Steel Co. and the Thomas Sheet Steel Co., five mills each. The Waddell Steel Co., idle for several weeks, will resume next Sunday midnight.

Virtually the only recession in production this week, as compared with the previous week, is in the number of active tin mills. The Trumbull Steel Co. is operating but six tin mills this week, against 19 two weeks ago and 13 last week. The Falcon Tin Plate Co. has five tin mills on the active list.

At its Girard works, the A. M. Byers Co., Pittsburgh, has on 88 puddling furnaces and its plate and bar mills on double turn. Until this week, they have been operating only on single turn.

### Decision Expected Soon on Freight Rates to Seaboard

**PITTSBURGH, Aug. 11.**—Decision is not expected for about 30 days on the request of local steel companies for a downward revision of freight rates to the Atlantic seaboard on steel destined for export. This action was taken by the traffic managers of the steel companies at a conference held last week in New York with the joint executive traffic committee of the railroads. Steel companies represented that the present rate of 25½c. per 100 lb. to New York on steel for export was neither in harmony with the cost of living as compared with 1913, nor with the changes that had taken place in domestic tariffs. Changes in the domestic tariffs, if followed strictly on a percentage basis in the framing of export rates, would produce a rate from Pittsburgh to New York of 17½c. per 100 lb., while based on the cost of living, which is now 148 per cent above that of 1913, a rate of 19c. would result. The 1913 rate for export steel was 9½c. per 100 lb. from Pittsburgh to New York, with Boston and Norfolk, Va., having the same rate, and Philadelphia enjoying a preferential of 2c. and Baltimore of 3c. per 100 lb. under New York. These differentials have been preserved in changes since made.

The report of the Engineering Foundation, for the year ended Feb. 14, 1924, the ninth year, shows that over \$8,600 was the sum expended in that year for research projects and nearly \$8,000 for the promotion of research and that at the opening of the year there was nearly \$35,000 available for the current year's needs. Ambrose Swasey has given over \$500,000 for the endowment of the foundation and Edward D. Adams gave \$5,000 to aid in financing the National Research Council in 1917. A considerable part of the 105-page document is given over to the third report on the fatigue of metals research by H. F. Moore and T. M. Jasper.

# Machinery Markets and News of the Works

## LAG IN SALES CONTINUES

### Slight Increase in Inquiry Includes One for Several Tools for an Axle Maker

#### Additional Equipment Asked for in New List of Chicago Board of Education

A slight increase in inquiry is noted in some centers, but the lag in sales, which has been the rule in all districts for several weeks, continues. The amount of pending business and the expectation of a resumption of railroad buying in the fall seem to be underlying factors of improved sentiment in the trade. Agricultural implement manufacturers, whose purchases of machine tools in the past two years have been of negligible proportions, are expected to appear in the market.

An outstanding item of interest is the reported inquiry of the Salisbury Axle Co., Jamestown, N. Y., manufacturer of automobile axles and hubs, for more than 100 tools, new and used. The inquiry is made in anticipation of expansion of plant facilities. As no time limit has been set on purchases, dealers expect that final closing of the machinery may be somewhat removed.

Additional light sheet metal working equipment

totaling more than 180 items is called for in a new list issued by the Chicago Board of Education for the Sabin, Phillips, Parker, Herzl and Harper junior high schools. The machines include forming rolls, cornice brakes, squaring and rotary shears, etc.; vises, gas furnaces and several types of stakes being among other items.

A list for the Nicholas-Senn High School, Chicago, is looked for within the coming week and it is expected that the large lathe list for the Crane Technical High School, also of that city, will be closed within ten days.

Quotations on 30 to 40 metal and woodworking machines have been asked for by a recently-organized company in Tennessee, and an inquiry for 10 machine tools has been received from a company in Denver.

The Great Northern Railroad is inquiring for four tools. The Santa Fe is expected to close within two weeks on part of its revised list. The White Motor Co., Cleveland, is figuring on four lathes and two grinders for an experimental department. An inquiry for 10 special presses and for tool room equipment for a plant in Ohio, has been received by dealers in Cleveland.

Complete award of the tools on the list of the Shibaura Engineering Co., Tokio, Japan, (sometimes referred to as the Japanese General Electric Co.), is looked for during the next week or 10 days. More than 15 of the tools have been placed. The list is now expected to total about \$600,000.

## New York

NEW YORK, Aug. 12.

INQUIRIES for single tools are evidently on the increase but the number of purchases is still small. A lathe maker in Ohio has announced an advance in prices of 4 to 5 per cent, as justified by improved materials and inspection. The Salisbury Axle Co., Jamestown, N. Y., reported to have received a large contract for axles from two automobiles manufacturers, is believed to be contemplating the purchase of a number of tools.

Part of the large list of machine tools asked for by the Shibaura Engineering Co., Tokio, Japan, through Mitsui & Co., New York, have been purchased and complete award of the list, which it is now expected will total about \$600,000, is expected during the next week to 10 days. Among the tools purchased thus far are two large Betts boring mills, one large Newton portable slotter and a Newton duplex milling machine from the Consolidated Machine Tool Corporation of America; four large Libby turret lathes from the International Machine Tool Co., four large milling machines from the Cincinnati Milling Machine Co., one small milling machine from the Ingersoll Milling Machine Co., one 48-in. lathe from the American Tool Works Co. and several small boring mills from the Bullard Machine Tool Co.

Among other purchases the past week were a 2000-lb. single frame hammer by the Utah Copper Co. and a 1500-lb. and a 4000-lb. steam hammer by the Atchison, Topeka & Santa Fe.

Contract has been let by the Albany Hardware & Iron Co., 41 State Street, Albany, N. Y., to J. J. Finn & Son, 9 Cuyler Avenue, for a seven-story distributing and storage building, 120 x 200 ft., to cost \$500,000 with equipment. Fuller & Robinson, 95 State Street, are architects.

The Superintendent of Lighthouses, Staten Island, N. Y., will take bids until Aug. 19 for 237 tons of cast iron sinkers and balls, varying in weight from 120 to 6500 lb. each,

with rock iron mooring eye; until Aug. 27 for 104 small steel buoys, welded construction with counterweight, proposal 17581.

The American Sugar Refining Co., 117 Wall Street, New York, has plans under way for a new refinery in the harbor district, replacing its obsolete plant on South Second Street, Greenpoint district, Brooklyn. It will be financed from the sale of the company's holdings in the Great Western Sugar Refining Co., Denver, Colo., aggregating \$9,538,560, a considerable portion of the fund to be used for such account. The project will include a power house. Earl D. Babat is president.

The Diocese of Long Island, Bishop Thomas E. Melloy, Clermont and Greene Avenues, Brooklyn, plans the installation of a manual training department in the four-story Catholic high school to be erected at the Eastern Parkway, Classon Avenue and Union Street, Brooklyn, estimated to cost \$1,025,000. Robert J. Reiley, 60 East Forty-first Street, New York, is architect.

A manufacturer of talking machine equipment and specialties, name temporarily withheld, has purchased through the Roman-Callman Co., Bridge Plaza, Long Island City, real estate, the two-story factory now in course of erection on Albion Street, Elmhurst, L. I., 100 x 150 ft., for a new plant, and will begin the installation of machinery at an early date.

Fire, Aug. 7, destroyed the plants of the Webb-Rite Piston Ring Co. and the Plattsburg Re-Grinding Co., Plattsburg, N. Y., occupying the former plant of the Lozier Motor Co., with loss estimated at \$50,000; the machinery loss approximates \$22,000. Both companies plan to rebuild.

The International Petroleum Co., 120 Broadway, New York, will soon place orders for equipment for its proposed pipe line in Venezuela, 400 miles long, with pumping stations, etc., to cost \$1,000,000 with equipment.

The Water Power Commission, Copenhagen, Denmark, has plans for the construction of a Government-owned hydroelectric generating plant at Norrforsen, on the Ume River, with initial capacity of 12,000 kw. Harry Sorensen, commercial attaché, American Consulate, Copenhagen, has information regarding the project.

E. R. Squibb & Sons, 80 Beekman Street, New York, manufacturers of chemical specialties, have filed plans for

the erection of a one-story power house, 45 x 120 ft., at their new factory in the Columbia Heights section, Brooklyn. The entire project will involve more than \$100,000. Russell G. Cory, 30 Church Street, is architect and engineer.

The Board of Education, Westbury, N. Y., plans the installation of manual training equipment in its new two-story high school estimated to cost \$300,000, for which a general contract has been awarded to Kenneth Mackay, 2 Hudson Street, Yonkers, N. Y. Peabody, Wilson & Brown, 140 East Thirty-ninth Street, New York, are architects.

D. A. Summo, 280 Huguenot Street, New Rochelle, N. Y., architect, has plans for a one-story automobile service, repair and garage building, 95 x 125 ft., at Bronxville, N. Y., to cost approximately \$50,000.

The Crane Co., 836 South Michigan Avenue, Chicago, has taken out a permit for the erection of its one-story factory branch and distributing works, 80 x 275 ft., at Ridgewood, Brooklyn, to cost approximately \$100,000 with equipment. Raymond Hood, 18 East Forty-first Street, New York, is architect.

The New York Blue Print Paper Co., 96 Reade Street, New York, is taking bids for extensions and improvements in its plant on Terrace Avenue, Jersey City, N. J., 35 x 100 ft., estimated to cost \$30,000, for which plans have been prepared by John Helmers, 135 Summit Avenue, West Hoboken, N. J., architect.

The Public Service Corporation, Terminal Building, Newark, N. J., has purchased in the name of its subsidiary, the Holland Co., a two-story and basement building, 98 x 150 ft., at Colt and Twenty-first Streets, Irvington district, adjoining its present motor bus works at this location. The new structure will be equipped for repairs, maintenance and upkeep of motor buses, to be probably given over later to the manufacture of bus bodies. As in the case of the company's present building here, the structure was acquired from the Day-Elder Motors Corporation, manufacturer of motor trucks, which has removed its plant to another site in this same section.

Walter H. Samuels, 400 Belleville Avenue, Bloomfield, N. J., has had plans drawn for a one-story machine shop, 36 x 50 ft. F. L. Pierson, 160 Bloomfield Avenue, is architect.

The New York Storage Battery Co., 162 West Fifty-sixth Street, New York, has leased the building at 694 Eleventh Avenue for a new plant and will take possession at an early date.

The Telescope Cot Bed Co., Granville, N. Y., is inquiring for 6-in. iron pipe for a water line and also for a 24-in. automatic knife grinder.

W. F. Wittel & Co., 590 Lyons Avenue, Irvington, N. J., recently organized, will manufacture wire fencing. It is planning to install several wire fence weaving machines and Mr. Wittel expects that it will be necessary to erect a concrete building in the near future.

A. K. Mosely, Franklin Street, S. W., Troy, N. Y., has plans for the construction of a two-story automobile service, repair and garage building, 59 x 120 ft., estimated to cost \$60,000 with equipment.

Traveling cranes, hoisting and electric power equipment, industrial trucks and other equipment will be installed at the new freight terminal to be constructed by the Dollar Freight Terminal Co., 11 Moore Street, New York, at Hunts Point, estimated to cost \$2,800,000. Stone & Webster, Inc., 120 Broadway, is architect and engineer. Richard Dollar is president.

The Board of Education, New Rochelle, N. Y., plans the installation of manual training equipment in the proposed two-story high school to be erected on Center Avenue, estimated to cost \$800,000, for which Starrett & Van Vleck, 8 West Fortieth Street, New York, are architects.

## Philadelphia

PHILADELPHIA, Aug. 11.

**P**ERMIT has been taken out by the Philadelphia Electric Co., Tenth and Chestnut Streets, Philadelphia, for its steam-operated electric generating plant on the Delaware River, near Erie Avenue, totalling 600 x 930 ft. Stone & Webster, Inc., 147 Milk Street, Boston, is engineer and contractor. The Philadelphia company is also projecting plans for a hydroelectric generating station on the Susquehanna River, near Conowingo, Md., with ultimate capacity of 500,000 hp.

The Union Tank Car Co., 21 East Fortieth Street, New York, will begin the construction of a one-story car repair and maintenance shop at Penrose Avenue and Gallows Lane, estimated to cost \$130,000 with equipment. The Hughes, Foulkrod Co., Commonwealth Building, is the general contractor.

The Board of Education, City Hall, Philadelphia, will install manual training departments in several new schools for which plans are under way, including two senior high schools, four and five stories, at Lancaster Avenue and Fifty-ninth Street, and at Nineteenth Street and Hunting Park Avenue, respectively, estimated to cost \$1,750,000 each; and one proposed junior high school adjoining the senior high school to be erected at Nineteenth Street and Hunting Park Avenue, estimated to cost \$1,000,000. Work will begin in the fall.

The Columbia Steel Equipment Co., 152 North Eleventh Street, Philadelphia, will soon begin work on its proposed plant at Third and Wingohocking Streets, estimated to cost \$50,000, for which bids on general contract recently were asked by J. Frank Clark, 23 South Sixteenth Street, architect.

The Calcos Steel & Iron Co., Weightman Building, Philadelphia, has inquiries out for about 150 tons of steel shafting, 4 in. diameter and larger, 8 ft. and longer.

The Pennsylvania Power & Light Co., Allentown, Pa., is completing plans for its proposed electric generating plant on the Susquehanna River, near Sunbury, Pa., to cost in excess of \$5,000,000 including transmission lines, etc.

The Auto Appliance Co., Allentown, Pa., specializing in ignition equipment, etc., will operate a repair and service shop at its new works at 123-29 North Ninth Street, replacing the plant previously operated at 11 North Tenth Street, with larger increased floor space.

Fire, Aug. 1, destroyed a portion of the plant of the Jones Foundry Co., Watsontown, Pa., manufacturer of iron and steel castings, and that of the Watsontown Wood Products Co., on neighboring site, with combined loss in excess of \$100,000 including equipment. Both companies are considering plans for rebuilding.

The Bethlehem Steel Corporation, Bethlehem, Pa., has plans under way for a new steam-operated electric power plant at its Cambria Works, Johnstown, Pa., estimated to cost \$200,000. A. T. Kellar is company engineer in charge.

The Randolph Coal Co., Pottsville, Pa., recently organized, has acquired the local plant and property of the Schuylkill Valley Coal Co. at a public sale. The new owner plans expansion and the installation of additional equipment.

Manual training equipment will be installed in the two-story and basement high school to be erected at Duryea, Pa., estimated to cost \$250,000, for which plans are being drawn by Frank J. Miller, Brooks Building, Scranton, Pa., architect.

The Benton Wagon Works, Benton, Pa., has arranged for converting its plant for the manufacture of automobile bodies and will give the entire works over to this line of production, discontinuing wagon-building.

The Van Sciver Corporation, Morrisville, Pa., has acquired the local sand and gravel plants of the Curtis & Hill Co. and plans the installation of digging, conveying, loading and other equipment.

The Sorco Mfg. Co., Scranton, Pa., recently incorporated, will manufacture automatic refrigerating machines. It is in the market for cold drawn steel tanks, seamless steel tubing and automatic control accessories. Operations are under way at the plant of the Hall-Borchert Mfg. Co. Stuart Otto heads the company.

The Board of Education, 121-23 Chestnut Street, Harrisburg, Pa., plans the installation of manual training equipment in the proposed two-story and basement senior high school to be erected in the Allison Hill section, estimated to cost \$500,000. Lapley & Hornbostel, Ebner Building, are architects.

## St. Louis

ST. LOUIS, Aug. 11.

**T**HE Roxana Petroleum Corporation, Arcade Building, St. Louis, contemplates the construction of a new lubricating oil plant at Roxana, near Wood River, Ill., to be operated in conjunction with its present oil refinery. Thomas F. Lydon is president.

The American Foundry Co., Hot Springs, Ark., recently organized, has plans for the establishment of a local foundry for the production of cast iron pipe and other iron castings, to cost \$50,000. W. F. Fullington is president, and T. M. Fullington, vice-president and general manager.

The Board of Education, Webster Groves, Mo., plans the installation of manual training equipment at its proposed two-story high school estimated to cost \$160,000, for which bids are being taken on a general contract. William B. Ittner, Board of Education Building, St. Louis, is architect.

The Oklahoma Pipe Line Co., Ada, Okla., has acquired about 40 acres near Francis, Okla., a portion of the site to be used for the construction of a pumping plant in connection with the Oklahoma Pipe Line Co.

## The Crane Market

**F**EW new inquiries for cranes have appeared in the past week. A number that have been in the market for several weeks are still pending with action expected at any time. The Long Island Railroad, Jamaica, N. Y., is understood to have closed on its four 20-ton electric overhead cranes with a Central Western crane builder. Among current inquiries is one from the American Smelting & Refining Co., New York, for two 10-ton electric overhead traveling cranes for Baltimore. The Southern Railway, Washington, which has been an active purchaser of cranes for several months, is understood to have closed on the overhead cranes for the Birmingham shops with the Pawling & Harnischfeger Co. Still pending are the cranes to be installed in the company's shops at Atlanta, Ga., Spartanburg, S. C., and Knoxville, Tenn.

July sales of locomotive cranes by members of the Locomotive Crane Manufacturers' Association aggregated 36 per cent of capacity, or one per cent more than during June. July was the first month for some time in which there had not been a decrease in sales. The Columbian Hardware Co., Cleveland, has awarded contract for construction of a warehouse for which a 10-ton and 5-ton electric traveling crane will be required. The Park Drop Forge Co., Cleveland, is having constructed a warehouse for which a 3-ton electric crane will be required.

The crane market in the Chicago district is quiet. Some good business is pending and it had been expected that a portion of it would be closed by this time, but the pros-

pective purchasers, among them steel manufacturers, still are withholding orders. The American Spiral Co., Chicago, has purchased a 5-ton, 3-motor electric traveling crane. The Universal Portland Cement Co. is expected to close the latter part of the present week for three bucket handling cranes.

The Copper Cliff Co., 421 I. W. Hellman Building, Los Angeles, is in the market for two used 5-ton, 57 to 60 ft. span, electric cranes and a 5 to 10-ton 8-wheel locomotive crane.

Among recent purchasers are:

Edison Electric Illuminating Co., Boston, a 25-ton, 54-ft. span overhead traveling crane from an Eastern builder.

Aberthaw Co., Boston, a 7½-ton, 44-ft. span, 3-motor crane for the Smith & Winchester Foundry, South Windham, Conn., from the Northern Engineering Works.

Trenton Malleable Iron Co., Trenton, N. J., a 5-ton, 31-ft. 6-in. span, single I beam crane from the Shepard Electric Crane & Hoist Co.

Monighan Machine Co., Chicago, a 15-ton, 60-ft. span, 4-motor, overhead traveling crane from the Milwaukee Electric Crane & Mfg. Co.

Faltoute Iron & Steel Co., Newark, N. J., four 5-ton hand power trolleys, three 5-ton and one 3-ton chain blocks for the United States Metals & Refining Co., Chrome, N. J., from the Yale & Towne Mfg. Co.

tion with a proposed pipe line from the Cromwell and Wewoka fields to this section, estimated to cost \$300,000.

H. A. Drake, Reliance Building, Kansas City, Mo., architect, has plans for the construction of a two-story and basement automobile service, repair and garage building at 811-13 Main Street, estimated to cost \$45,000.

The Ford Motor Co., Detroit, is having plans drawn by Ellis Charles & Co., Orpheum Building, Wichita, Kan., architects, for the erection of a one-story assembling and service works at Tonkawa, Okla., 100 x 130 ft., estimated to cost \$45,000.

The Atchison, Topeka & Santa Fe Railway Co., Topeka, Kan., has awarded a general contract to F. M. Spencer & Son, Tenth and Van Buren Streets, for a one-story shop at its local repair works, for sand-blasting and other service, estimated to cost \$45,000 with equipment.

## Chicago

CHICAGO, Aug. 11.

**N**EW inquiries for machine tools represent only a moderate volume of business. A fair turnover in used equipment has been done with inquiries continuing attractive. The Santa Fe railroad is expected to close within a week or so on a part of its revised list. It has purchased one 36-in. x 36-in. x 12-ft. planer and has three tools of this kind still included on its large list. The Great Northern is inquiring for a car wheel borer, an 18-in. lathe, bolt cutter, and a 44-in. boring and turning mill. A Denver concern is inquiring for a 2¼-ft. plain radial drill, two 17-in. Hartness turret chucking lathes, motor driven; two 18-in. x 8-ft. manufacturing engine lathes, motor driven; one No. 2 Bryant or equivalent semi-automatic deep hole grinder; one Gridley type automatic screw machine for bar stock up to 5-in. in diameter and 15-in. in length; one bolt threading machine and two sensitive drill presses.

The Chicago Board of Education is still working on its large lathe list for the Crane Technical High School, which is expected to be closed within a week or 10 days. The list for the Nicholas-Senn high school will be out within a few days, according to present plans.

Additional light equipment is called for in a new list for the Sabin, Phillips, Parker, Herzl, and Harper junior high schools and includes five Chicago cornice brakes, gage 16, 4 ft.-¼ in. long, five forming rolls, 1½-in. x 20-in.; five bar folding machines, 20¼ in.; five squaring shears; five Holdale revolving machines, standard; and 10 burring machines with standards. Excluding the first named, all the tools are to be of the Peck, Stow & Wilcox type, unless other-

wise noted. The following are to be furnished without regular standards; unless otherwise stated, five tools are involved in each item: Turning machines; wiring machines; setting down machines (Niagara); elbow edging machines; beading machines; crimping and binding machines; vises; 30 bull dog type gas furnaces; Groover gas furnaces (small size); ring and circular shears; Sampson punches; Moore's double seaming machines; rotary slitting shears; and five each of the following: Gutter beadings, ¼-in. rod; bench plates, hollow mandrel stakes; solid mandrel stakes; conductor stakes; blowhorn stakes; bevel edge square stakes; coppersmith stakes with horn; candle mold stakes (Niagara); square stakes (Niagara); common creasing stakes; needle case stakes; double seaming stakes; bottom stakes; double seaming stakes with four heads; round head stakes; and 10 hatchet stakes.

The Butler Railway Supply Co., Peoples Gas Building, Chicago, recently incorporated, will manufacture Perry side bearings and other supplies for steam railroads. It will not build a plant and will not purchase machinery. The officers are C. J. Curry, president; E. A. Woodman, vice-president; and O. S. Flath, secretary-treasurer.

The Machinery & Equipment Corporation of America, 11 South LaSalle Street, Chicago, has been organized to buy all kinds of machinery and equipment and kindred products and to engage in construction work, including the buying and wrecking of large plants and other undertakings of a similar character. The officers are Walter S. Hodgman, president; George C. Marsh, vice-president and general manager; Paul L. Mann, treasurer, and Joe G. Mann, secretary. Mr. Hodgman for many years was connected with the Western Electric Supply & Machinery Co. Mr. Marsh for many years was associated with manufacturing and selling of construction machinery, one of the organizers of the Morris Capron Mfg. Co., and later was president of the Machinery Sales Co. Paul L. Mann is president of the Consolidated Wire & Associated Corporation and Joe G. Mann is treasurer of the latter corporation.

The Red Cab & Motor Co., 53 West Jackson Boulevard, Chicago, operated by the Charles F. Heinig Co., same address, is having plans drawn by the Carnegie Co., 189 West Madison Street, architect, for a one and two-story and basement service, repair and garage building, 160 x 200 ft., estimated to cost \$100,000.

The Nebraska Gas & Electric Co., Lincoln, Neb., plans the construction of a number of automatic power substations in connection with a new transmission line from Lincoln to Plattsmouth, Neb. The entire project will involve \$500,000.

The Board of Public Works, Chicago, J. Ericson, 402 City Hall, engineer, will soon ask bids for two steam turbine centrifugal pumps, each with 70,000,000 gal. per day capacity, and accessory equipment, for the South Central Park and Springfield pumping stations.

The Chicago, Rock Island & Pacific Railroad Co., 139 West Van Buren Street, Chicago, has plans for an addition

to its engine house and shops at Cedar Rapids, Iowa, estimated to cost \$30,000. A. F. Hawk is company architect.

The City Council, Colorado Springs, Colo., has tentative plans for a steam-operated electric generating plant for auxiliary service, with cost estimated at \$375,000 and \$475,000. Wood & Weber, Denver, Colo., are engineers.

The City Council, Centralia, Ill., has plans under way for extensions and improvements in the municipal waterworks, to include the installation of three steam turbine pumping units, two of 3,000,000 gal. per day capacity, and one of 5,000,000 gal. per day. Pearse, Greeley & Hanson, 6 North Michigan Avenue, Chicago, are engineers.

## New England

BOSTON, Aug. 11.

THE first half of August shows little improvement in machine tool business. The outstanding feature of the market is an inquiry for more than 100 tools, new and used, from the Salisbury Axle Co., Jamestown, N. Y., automobile axles and hubs, in anticipation of plant expansion. No time limit has been set on purchases. New England machine tool plants, collectively, are operating at a new low record for 1924. One of the brightest spots is a Springfield, Mass., metal-saw plant which is operating close to capacity on an order for machines recently received from the Middle West.

Small tools are in increased demand, but the market is not active. Yale & Towne spur geared blocks, heretofore quoted at 20, 10 and 7½ per cent discount, are now 30 and 20 per cent discount. Small tool and hoist prices otherwise remain unchanged.

Considerable interest is being shown in the machine tool exhibit at New Haven, Conn., Sept. 15-18. It is conservatively estimated that 90 per cent of the superintendents of New England's leading metal-working plants have signified intentions of attending.

The J. J. Harrigan Coal Co., Beverly, Mass., will erect a 3500-ton coal storage plant on Jefferson Avenue, Salem, to cost \$50,000 including conveying equipment.

John I. Paulding, Inc., New Bedford, Mass., electric supplies, contemplates the erection of a two-story, 30 x 50 ft. addition. The architect has not been selected.

Lombard Co., 236 A Street, South Boston, grindstones, has awarded contract for a two-story, 50 x 150 ft. plant near Welling Bridgeton, Somerville, Mass. Clifford & Roebat, 101 Tremont Street, Boston, are the engineers.

Motors, etc., are required for a four-story, 50 x 100 ft. addition to be built by the Standard Box Co., 28 Gerrish Avenue, Chelsea, Mass., bids for which are being taken. S. S. Eisenberg, 46 Cornhill, Boston, is the architect.

The Thomson Electric Welding Co., 161 Pleasant Street, Lynn, Mass., is having plans prepared for a one-story factory to have approximately 6000 sq. ft. of manufacturing space. H. M. Haven and A. T. Hopkins, 11 Beacon Street, Boston, are the engineers.

Foundations are being laid for a two-story addition to the plant of the Baldwin Refrigerator Co., Burlington, Vt., 60 x 360 ft., with one-story power house. A general contract has been awarded to the Kieslick Construction Co., 176 College Street.

The Simonds Saw & Steel Co., North Street, Fitchburg, Mass., will build a three-story and basement addition, 50 x 150 ft., estimated to cost \$50,000. John O. DeWolf, 45 Bromfield Street, Boston, is engineer in charge.

The Trumbull-Vanderpoel Electric Mfg. Co., Bantam, Conn., has awarded a general contract to the Torrington Building Co., 182 Church Street, Torrington, Conn., for a two-story addition, estimated to cost \$45,000 with equipment.

Fire, Aug. 6, destroyed a portion of the general boat-building works and machine shop at the plant of the Baltzer's Boat Works, Eastport, Me., with loss estimated at \$25,000. It is planned to rebuild.

The Central Maine Power Co., Augusta, Me., is disposing of a bond issue of \$1,550,000, a portion of the proceeds to be used for extensions and improvements in power plants and system.

The Thomson Electric Welding Co., Cincinnati, has preliminary plans for the establishment of a new plant at Lynn, Mass., where an experimental works is now being operated. Negotiations are said to be under way for the acquisition

of the former factory of the Campbell Electric Co., Stuart Street, Lynn. The present business in Cincinnati will be removed to the new location.

The Board of Directors, Camp School, New Britain, Conn., has awarded a general contract to the Standard Construction Co., New Haven, Conn., for a two-story steam power house, 32 x 46 ft.

## Detroit

DETROIT, Aug. 11.

BIDS will be received by the Flint Malleable Castings Co., Dayton Building, Flint, Mich., until Aug. 29 for the construction of its one-story foundry, 140 x 380 ft., for which plans have been prepared by Wright & Nice, Kearsley and Smith Streets, architects. John Barringer is manager.

The Owosso Casket Co., Owosso, Mich., is remodeling a two-story factory, 32 x 120 ft., in the vicinity of its present plant, for the manufacture of metallic caskets, developing a new department of the business. Fred B. Woodard is president.

The Consolidated Paper Co., Monroe, Mich., is contemplating the erection of a new mill in the vicinity of Glenfield, Pa., to cost \$100,000 with machinery, work to begin next year. E. C. Rauch is president.

Manual training equipment will be installed in the three-story Burton Junior high school to be erected at Grand Rapids, Mich., estimated to cost \$775,000, for which plans are being prepared by H. H. Turner, Michigan Trust Building, architect. W. W. Bradfield, same building, is mechanical engineer.

The Dam Creek Lumber Co., Detroit, is considering the erection of a one-story mill and power house in the vicinity of Sault Ste. Marie, Mich., estimated to cost \$55,000 with equipment.

The Calumet & Hecla Co., Calumet, Mich., has work in progress on a fuel recrushing unit at its smelting plant, to include the installation of grinding, crushing and other machinery.

The Herndon Fruit Co., 123 North East Street, Lansing, Mich., has plans under way for a new four-story cold storage plant, 85 x 200 ft., estimated to cost \$55,000, for which it is expected to ask bids on a general contract at an early date. The Warren M. Holmes-Powers Co., Tussing Building, is architect. Harry Herndon is president.

The Metzgar Co., Grand Rapids, Mich., manufacturer of automobile wheels, has plans under way for extensions and the installation of additional machinery to more than double the present capacity. The company specializes in wood wheels for motor trucks and proposes to develop an output of about 850 wheels per day. Leroy Metzgar is president and general manager, and S. E. Osgood, secretary.

Manual training equipment will be installed in the new two-story and basement high school to be erected at Big Rapids, Mich., estimated to cost \$215,000, for which bids have been asked on a general contract. Frank Forster, Lyman Building, Muskegon, Mich., is architect.

## Buffalo

BUFFALO, Aug. 11.

THE New York Central Railroad, Grand Central Terminal, New York, has plans for a complete electrification of its yards at Selkirk, N. Y., for which considerable machinery and equipment will be required. The plans include 110 steel towers, each 150 ft. high. F. H. Hardin is chief engineer.

George W. Haxton & Son, Oakfield, N. Y., operating a garage and service station, are in the market for a motor-driven air compressor, complete with auxiliary equipment.

The Water and Light Commission, Salamanca, N. Y., has engaged George R. Newell, Inc., Rochester, engineer, to prepare plans for a new water reservoir, which with machinery and pumping equipment will cost \$80,000.

The Pratt & Letchworth Co., 189 Tonawanda Street, Buffalo, will erect a one-story addition, 32 x 77 ft., estimated to cost \$40,000.

The Common Council, St. Johnsville, N. Y., plans the installation of electric-operated pumping equipment in connection with extensions in its waterworks, estimated to cost \$170,000.

The Borough Commission, Warner, N. Y., plans the installation of a pumping station in connection with a proposed pressure water system, for which it will soon ask bids, estimated to cost \$25,000.

Peter Drago, 500 Central Park, Rochester, N. Y., architect, has plans for a two-story automobile service, repair

and garage building, 67 x 125 ft., at 155 State Street, to cost \$42,000.

The Board of Village Trustees, Fredonia, N. Y., plans the installation of pumping machinery in connection with extensions and improvements in the municipal waterworks, for which bonds for \$69,000 have been authorized.

The Binghamton Light, Heat & Power Co., Binghamton, N. Y., has acquired the municipal electric power plant at Newark Valley, Tioga County, N. Y., and will consolidate with its system. Extensions are planned in this section, with the installation of additional equipment.

The Board of Education, Waverly, N. Y., is considering the installation of manual training equipment at the proposed high school addition estimated to cost \$160,000, for which plans will soon be authorized.

## Indiana

INDIANAPOLIS, Aug. 11.

THE Board of Works, Marion, Ind., is securing preliminary estimates of cost for a municipal electric light and power plant and proposes to proceed with detailed plans in the near future.

The Middle West Utilities Co., Chicago, has secured a controlling interest in the Indiana Hydro-Electric Co., Indianapolis, operating a hydroelectric generating station at Norway. The purchasing company plans the early development of water power properties of the Indiana company and will proceed with the construction of the proposed hydroelectric generating plant on the Tippecanoe River, near Monticello, Ind., estimated to cost \$2,000,000. The Middle West company is disposing of a stock issue of \$970,000. Martin J. Insull is president.

The Board of School Trustees, Wakarusa, Ind., plans the installation of manual training equipment in the proposed one and two-story high school, estimated to cost \$125,000. Griffith & Goodrich, 211 East Berry Street, Fort Wayne, Ind., are architects.

The Board of School Trustees, Evansville, Ind., will soon begin the construction of a one-story vocational shop at the Reitz high school, to be equipped primarily as a machine shop for instruction in automobile repair work. Charles L. Troutman is architect.

The Cleveland, Cincinnati, Chicago & St. Louis Railroad Co., Big Four System, Cincinnati, has awarded a general contract to the Walsh Construction Co., 19 South La Salle Street, Chicago, for a one-story battery works at Beech Grove, Ind., estimated to cost \$30,000 with equipment.

Traveling cranes, loading and conveying machinery, factory trucks and other equipment will be installed in the proposed terminal warehouse to be constructed by the National Terminals Corporation, Indianapolis, at St. Louis, to cost \$5,000,000. William J. Hogan is president, and Norman E. Metzger, vice-president and secretary.

## Cincinnati

CINCINNATI, Aug. 11.

MACHINE-TOOL buying has been light the past week, scattered orders only being booked. Prospects for the future, however, are brighter, judging from reports to manufacturers from all sections of the country. It is expected that railroad buying will be resumed this fall on a large scale and agricultural implement manufacturers, who have practically been a negligible factor in the market, are expected to purchase equipment to bring shops up to date. Some replacement business from automobile manufacturers is developing, and orders for a number of tools have been received. The market, however, is dull, and not much improvement is expected before September.

The Wellston Mfg. Co., Wellston, Ohio, has begun the erection of an addition to its foundry to take care of increasing business. Some new equipment will be installed. I. P. Warden is president.

Plans are being considered by the Signal Mountain Portland Cement Co., Chattanooga, Tenn., for a third unit at its mill, estimated to cost \$500,000 with machinery.

The Mariemont Co., Mariemont, Ohio, will take bids until Aug. 26 for a central power house and steam plant, estimated to cost \$350,000 with equipment. G. Mirick, 1 Baker Court, Cincinnati, is general manager in charge. French & Hubbard, 210 South Street, Boston, are equipment engineers.

The Hermitage Portland Cement Co., 174 Third Avenue, Nashville, Tenn., is contemplating an addition to its plant, including the installation of an additional kiln and accessory equipment, estimated to cost \$275,000. R. T. Miller is general manager.

The Cleveland, Cincinnati, Chicago & St. Louis Railway Co., Big Four System, Big Four Building, Cincinnati, has awarded a general contract to the Walsh Construction Co., 19 South La Salle Street, Chicago, for the erection of an addition to its engine house and shops at Sharonville, Ohio, estimated to cost \$90,000. H. Baldwin is chief engineer.

The Winchester Waterworks, Co., Inc., 14 Beacon Street, Boston, W. Wheeler, president and engineer, operating at Winchester, Ky., has plans for a one-story power house and pumping station near Winchester, estimated to cost \$60,000.

The Board of Education, Salineville, Ohio, plans the installation of manual training equipment at the proposed high school, estimated to cost \$200,000. J. K. Griffen, St. Clairsville, Ohio, is architect.

## Pittsburgh

PITTSBURGH, Aug. 11.

THE past week has brought no material improvement in machine tool business. There is a very definite tendency toward delay on the part of those having big projects in progress in the matter of closing against the tools wanted, and pickup business is light. The National Tube Co. is yet to buy the metal-working machinery for its Gary tube mill and other important business pending includes tools for the machine shop of the Homestead works, Carnegie Steel Co., a list for the Universal Portland Cement Co., Universal, Pa., the Youngstown Sheet & Tube Co. requirements for its Indiana Harbor plant, tools for the Sharon and East Pittsburgh works of the Westinghouse Electric & Mfg. Co. and those for the Wilmerding plant of the Westinghouse Air Brake Co.

The National Tube Co. has ordered 10 motors for driving the 14-in. and 16-in. continuous skelp mills at Gary, Ind., from the Allis-Chalmers Mfg. Co., while the Westinghouse Electric & Mfg. Co. will furnish the alternating current switchboard, the Pittsburgh Electrical & Machine Works the direct current switchboard and the General Electric Co. a 1500-kw. motor generator set. Pinion and mill housings order has gone to the Wheeling Mould & Foundry Co.

A preferred stock issue of \$2,063,000 is being sold by the West Penn Power Co., West Penn Building, Pittsburgh, a portion of the proceeds to be used for extensions and improvements. The company has work under way on additions to its generating plants to increase the present capacity by 70,000 kw. A. M. Lynn is president.

The Williams Gauge Co., 543 Fourth Avenue, Pittsburgh, has filed plans for a one-story machine shop, to cost approximately \$30,000 with equipment. A general contract was let recently to the Austin Co.

The Superior Pocahontas Coal Co., Davy, W. Va., is reported to be planning to rebuild its three main buildings, destroyed by fire July 29, with loss estimated at \$150,000 including equipment.

The Guyan Machine Shops, Logan, W. Va., machinery dealer, has inquiries out for a wheel press, arranged for motor drive, from 200 to 300 tons capacity.

The Pennsylvania-Ohio Power & Light Co., Sharon, Pa., and Youngstown, Ohio, has made application to issue bonds for \$19,000,000 and \$2,700,000, a portion of the proceeds to be used for extensions and improvements in power plants and system.

The Clarksburg Big Vein Coal Co., Clarksburg, W. Va., is reported to be planning to rebuild the tippie at its Whiteman mine, destroyed by fire Aug. 7. An official estimate of loss has not been announced.

Ovens, power equipment, conveying machinery and other mechanical equipment will be installed in the four-story plant, 100 x 140 ft., to be erected by the P. H. Butler Co., Seventeenth and Pike Streets, Pittsburgh, estimated to cost \$200,000, for which plans are being drawn by the Hunting-Davis Co., Century Building. E. M. Jenkins is president.

Bids will be received by the United States Engineer, Pittsburgh, until Aug. 18, for two vertical belt-driven duplex air compressors, circular 56; also for two 48 x 108 in. vertical fire tube boilers, circular 55.

## Cleveland

CLEVELAND, Aug. 11.

THE machinery market shows a little improvement over last month. Sentiment is better and single tool orders and inquiries have increased slightly. A Detroit manufacturer placed 13 automatic screw machines through a Cleveland dealer and an inquiry came from an Ohio plant for 10 presses of a special type and tool room equipment. A recently organized Tennessee company has taken quotations on 30 to 40 metal and wood-working machines. The White Motor Co., Cleveland, is figuring on four lathes and two grinding machines for an experimental department. The Hudson Motor Car Co. during the week placed two turret lathes with a Cleveland manufacturer.

The outlook for large business from Detroit automobile manufacturers during the fall is not very promising. The Studebaker Corporation, which had in prospect a buying program involving considerable machinery for manufacturing new car models, has advised the trade that this equipment will not be bought.

The Town Council, St. Marys, Ohio, has taken bids for an addition to its light and water plant. One 350-gal. per min. deep well pump and one 1000-gal. per min. centrifugal force pump will be installed.

A manual training department will be included in a high school to be built at Dillonvale, Jefferson County, Ohio. C. J. Thompson is president of the Board of Education.

The village of Newton Falls, Trumbull County, Ohio, is having plans prepared for additions to its waterworks plant, involving an estimated expenditure of \$40,000. Equipment required will include deep well and high service pumps.

The Novelty Lamp & Shade Co., 2490 East Twenty-second Street, Cleveland, is taking bids for additions to its factory and boiler room, with an estimated cost of \$30,000. It will be two stories and basement, 81 x 62 ft. George A. Bishop, 1457 East Eighty-sixth Street, is the architect.

Moses Helper, National City Bank Building, Cleveland, will erect a two-story factory, 50 x 88 ft.

The Board of Trustees, Ohio State University, Columbus, Ohio, will take bids Sept. 2 for a four-story engineering experimental building, 120 x 190 ft.

A manual training department will be provided in one of the buildings to be erected for the new plant of the University School, Cleveland, contract for which will be placed shortly.

The town of Wadsworth, Medina County, Ohio, will take bids Aug. 23 for the electrification of its waterworks and ice plant. Equipment required will include five motors and five pumps. R. E. Garvin, Davis & Farley Building, Cleveland, is the consulting engineer.

## Gulf States

BIRMINGHAM, Aug. 11.

TENTATIVE plans are being considered by the Daniels's Ornamental Iron & Wire Corporation, 1739 Cotton Avenue, Birmingham, manufacturer of fire escapes, window guards and other ornamental iron products, for extensions and the installation of additional machinery. W. H. Daniel is head.

The Kirby Lumber Co., Call, Tex., will begin the erection of a one-story mill, estimated to cost \$100,000 including machinery. It is purposed to install electric-operated equipment. The Lufkin Foundry & Machine Co., Lufkin, Tex., has received a contract for a portion of the work. Headquarters are in the Commercial National Bank Building, Houston, Tex.

The Southern Mfg. Co., Tuscaloosa, Ala., has acquired property at Bessemer, Ala., and plans the construction of a new plant for the manufacture of general millwork specialties. It is also purposed to install a department later for the production of tool handles, spokes and other turned wood products. The present business at Tuscaloosa will be removed to the new location.

The Knox Process Corporation, Texas City, Tex., now building a local gasoline refinery to operate under a special electrical process, with cost approximating \$500,000, has preliminary plans for the construction of another unit, to cost a like amount, and will probably begin work in the fall. Later four more units will be built. The company is capitalized at \$3,000,000.

The Gulf Refining Co., Fort Worth, Tex., is considering plans for an addition to its oil and gasoline refineries and

the installation of additional machinery, estimated to cost \$450,000. H. J. Kelley is company engineer.

W. M. Smith & Co., Birmingham, machinery dealers, have inquiries out for a rail straightener.

The Bessemer Ice & Coal Co., Bessemer, Ala., has purchased property at Nineteenth Street and Fifteenth Avenue and is contemplating the erection of a new ice-manufacturing plant estimated to cost \$40,000.

H. C. Couch, Pine Bluff, Ark., and associates have plans under way for an electric light and power plant at Sterlington, La., to cost \$2,500,000 with equipment. Plans include the erection of high tension transmission lines within a radius of 100 miles. The plant will be operated by natural gas.

The Key-Repsher Ice Mfg. Co., Meridian, Miss., is planning the construction of a new one-story ice-manufacturing plant, estimated to cost \$100,000 with machinery.

The Plant City Brick Co., Plant City, Fla., operated by Ritter & Setzer, will build a power house at its proposed branch manufacturing and distributing plant at Seffner, Fla., to cost approximately \$50,000.

## Milwaukee

MILWAUKEE, Aug. 11.

SENTIMENT concerning machine-tool trade in the fall and winter has undergone a decided change for the better, although immediate business remains dull and featureless. Inquiry has improved, but is still dragging. There is no real demand and sales consist almost entirely of single items. Appointment of David M. Averill as general manager and E. E. Gunn as chief engineer Ajax Motors Co., Racine, Wis., is of interest to the industry because it forecasts the early retooling of the old Mitchell automobile works, which were stripped of all equipment before the sale to Charles W. Nash of Kenosha, who is the principal in the new Ajax corporation.

The Pawling & Harnischfeger Co., Milwaukee, manufacturer of electric traveling cranes, machine tools, contractors' equipment, etc., has placed in operation its new steel foundry, the former plant of the Hercules Steel Casting Co., acquired from the receiver last spring. This enables the concern to produce virtually its entire supply of castings, excepting for gasoline engines, which are purchased complete. The Hercules foundry, on Robinson Avenue, is equipped with a 5-ton electric furnace. The main works are at Thirty-eighth and National Avenues, in West Milwaukee. A. G. Hendricks is vice-president and general manager.

The Board of Public Works, Kenosha, Wis., will ask bids after Aug. 15 for a municipal garage and service station, 60 x 160 ft. A small list of miscellaneous tools will be purchased later.

The Appleton, Wis., Auto Exchange, 892 College Avenue, will erect a two-story garage and service building, 50 x 100 ft., designed by Edwin A. Wettengel, local architect. The cost is estimated at \$40,000 complete. The owners are Higinbotham & Reitzner.

The West Allis Board of Education has let the general contract to the Immel Construction Co., Fond du Lac, Wis., for a \$100,000 addition to the high school, which will be used mainly for industrial training. Equipment needs are not yet scheduled. Robert A. Messmer & Brother, 221 Grand Avenue, Milwaukee, are the architects.

The George A. Falk Mfg. Co., Milwaukee, has been incorporated with a capital stock of \$25,000 by George A. Falk, 2024 Brown Street; Joseph Fuszka, and J. S. Wilde, to manufacture machinery, mechanical appliances, toys and novelties and other specialties. No plans have been made for production as yet, but these are under consideration.

Charles Hess, 803 Third Street, Milwaukee, has engaged Henry G. Lotter, architect, 427 Milwaukee Street, local, to design a garage with complete service and repair department, 50 x 95 ft., one story and part basement. It will cost \$28,000.

## South Atlantic States

BALTIMORE, Aug. 11.

THE Tidewater Steel Corporation, 149 Broadway, New York, has acquired 6 acres at Hagerstown, Md., as a site for a new plant. The initial works will be one story, 65 x 300 ft., equipped as a steel fabricating plant, with estimated cost of \$80,000 including equipment.

The American Oil Co., American Building, Baltimore, has

tentative plans for a one and two-story oil storage and distributing plant at Wilmington, Del., to cost \$75,000 with equipment. Louis Blaustein is president.

The Southern Wire & Iron Works, Atlanta, Ga., is desirous of getting in touch with manufacturers of steel tubing with view to purchase of material.

The Thomasville Iron Works, Inc., Thomasville, Ga., has inquiries out for an electric furnace for the production of electric steel castings of large size.

The Savannah Electric & Power Co., Savannah, Ga., is arranging for an increase in capital from \$4,800,000 to \$5,300,000, a portion of the proceeds to be used for extensions and improvements.

The Chesapeake & Ohio Railroad Co., Richmond, Va., is reported to have preliminary plans for new locomotive and car repair shops near the city, with power house, estimated to cost \$2,000,000 with machinery. A portion of the works, it is stated, will be equipped for the assembling of locomotive parts. The plant will give employment to approximately 2000 operatives.

The Standard Oil Co., Baltimore, Md., has taken title to property at Elkton, Md., as a site for the construction of a new storage and distributing plant; a wharf will be built at Welch Point, in this same vicinity, and a pipe line constructed to the new plant. The entire project is estimated to cost close to \$85,000.

Bowling H. Jones, 913 Peachtree Street, Atlanta, Ga., and associates, are organizing a company to construct and operate a multi-story automobile service, repair and garage building estimated to cost \$750,000 with equipment. Detailed plans will be prepared at an early date.

The R. S. Armstrong & Brother Co., Atlanta, Ga., machinery dealer, has inquiries out for one 75-hp. and one 40-hp. motor, slip ring type, three phase, 60 cycle, 2200 volts.

The Board of Education, Winston-Salem, N. C., has authorized the installation of manual training departments in the Waughtown and Kimberly Park schools, for which bids will be asked soon on general contracts.

The Merchants' Fertilizer & Phosphate Co., Charleston, S. C., is reported to be planning to rebuild the portion of its local plant recently destroyed by fire with loss estimated at \$130,000 including equipment.

C. C. Coddington, Inc., 432 West Trade Street, Charlotte, N. C., local representative for the Buick automobile, has preliminary plans for a five-story service, repair and garage building estimated to cost \$900,000 with equipment. Albert Kahn, 1000 Marquette Building, Detroit, is architect.

The Southern Railway has awarded contract to the Foundation Co., New York, for new locomotive repair shops at Atlanta, Ga., the main building to be 300 x 325 ft. Facilities will be provided for two 200-ton electric traveling and several smaller cranes. The new shops will require additional boiler capacity in the power plant and this work is included in the contract of the Foundation Co. Construction will start in about three weeks.

The Hartsville Mfg. Co., Hartsville, S. C., has been organized to manufacture plow stocks, fertilizer distributors and other farm implements. It occupies the plant of the Coker's Pedigreed Seed Co. and is in the market for castings, soft steel bars, etc. David R. Coker is president.

## Pacific Coast

SAN FRANCISCO, Aug. 6.

**T**HE Basalt Rock Co., Napa, Cal., has construction in progress on a new plant near the city, with grinding, pulverizing and other machinery, estimated to cost \$150,000 including equipment.

The Board of Public Works, San Francisco, will take bids until Aug. 20 for a quantity of pipe for the Hetch Hetchy water project. The contract is estimated to involve \$700,000 for the material.

The United States Indian Agent, Fort Hall, Idaho, will take bids until Aug. 27 for one upright power drill for machine shop work, with automatic feed and lever feed.

The City Council, El Centro, Cal., has plans for the installation of an electrically-operated pumping plant, comprising two 1800-gal. per min. capacity units, with accessory equipment, estimated to cost \$100,000. Cone & Harris, 606 South Hill Street, Los Angeles, are consulting engineers.

The City Council, Santa Barbara, Cal., is arranging a special election to vote bonds for \$75,000, the proceeds to be used for the construction of a municipal hydroelectric power plant.

The Potter Radiator Corporation, Los Angeles, recently formed by a merger of the Potter Radiator Co., 5946 Pasadena Avenue, and McCorkle Mfg. Co., 319 Twelfth Street, Oakland, Cal., to manufacture gas radiators, contemplates

the establishment of a new plant in the vicinity of San Diego, Cal., for a combination of former individual company manufacture, estimated to cost \$500,000 with equipment.

The El Dorado Power Co., Channel and Sutter Streets, Stockton, Cal., operated by the Pacific States Gas & Electric Co., San Francisco, is completing plans for a hydroelectric generating station on Silver Fork, a branch of the American River, with capacity of 24,100 hp., estimated to cost \$3,650,000, with power dam, steel tower transmission line, etc.

Ovens, power equipment, conveying and other machinery will be installed in the proposed two-story plant, 80 x 160 ft., to be erected by the Perfection Bread Co., Sacramento, Cal., estimated to cost \$115,000. L. F. Starks, Ochsner Building, is architect.

The Potter Radiator Corporation, 5954-56 Pasadena Avenue, Los Angeles, organized with capital of \$800,000 paid in, will manufacture a general line of heating appliances, radiators and furnaces. Plans are under way for building a factory in southern California and another unit in the South. The company will be in the market about Jan. 1 for machine tools, foundry equipment and supplies. T. J. Potter, president of the original company by the same name, is president of the new concern.

The Copper Cliff Co., 421 I. W. Hellman Building, Los Angeles, is inquiring for used electric cranes and one 12-in. rolling mill with pinions and pinion housings, four stands three high, and one stand two high, complete with bed plate.

## Canada

TORONTO, Aug. 11.

**W**HILE there is a considerable volume of machine tool buying in prospect, orders closed the past week were almost entirely for one or two tools to a customer. Inquiries are coming in for equipment for new factories under construction and buying for replacement purposes and plant additions is expected to increase within the next six weeks. Both dealers and builders are more optimistic with regard to the future.

The automotive industry is buying for replacement purposes, with a good demand for tools for repair plants and garages, but practically no orders are coming forward for equipment for new plants for the production of motor cars, although some lists are expected from the Ford company at Ford, Ont.

A. Lavigne, Buckingham, Que., is in the market for equipment for an automobile repair shop.

The Royal Machine Works, Buckingham, Que., is interested in the purchase of tools and machinery for a machine shop.

C. Bazinet, St. Isidore, Que., will purchase a post drill, stand, etc., for heavy duty.

A. Vary, St. Remis, Que., will purchase tools for an automobile repair plant, including grinders, bench lathes, etc.

E. A. Ethier, Dalkeith, Ont., is in the market for tools for sawmill.

The Presto-O-Lite Co. of Canada, Ltd., 110 Elm Street, Toronto, manufacturer of automobile lighting systems, welding machinery, etc., is building an addition to its plant. Wells & Gray are general contractors.

The Kingston Shipbuilding Co., Kingston, Ont., a subsidiary of the Collingwood Shipbuilding Co., is having plans prepared for the construction of a dry dock, 300 x 700 ft., at a cost of \$4,000,000.

The Dominion Alloy Steel Co., Sarnia, Ont., will erect a steel rolling mill, 75 x 506 ft.; warehouse, 70 x 220 ft.; furnace building, 30 x 506 ft.; raw material building, 45 x 506 ft., and shearing building, 30 x 286 ft. Two 10-ton traveling cranes and one 40-ton crane will be installed. Contract for the structural steel has been awarded to the Sarnia Bridge Co.

The Dam Creek Lumber Co., Detroit, Mich., is contemplating the erection of a mill at Sault Ste. Marie, to cost \$50,000.

The ratepayers of Hastings, Ont., carried a by-law July 31 to guarantee the bonds of the Hastings Metal Products, Ltd., to the extent of \$15,000, and fixing the assessment on the land and buildings at \$5,000 for a period of 10 years, in return for which the company will start work immediately on the erection of a manufacturing plant.

The Crown Mining Co., Ltd., Larder Lake, Ont., will build a new mill. Charles A. Fox, mining engineer, is asking for prices on equipment and building material.

# Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE, under the general heading of "Iron and Steel Markets" and "Non-Ferrous Metals."

## Bars, Shapes and Plates

Bars:	Per Lb.
Refined iron bars, base price .....	3.24c.
Swedish charcoal iron bars, base .....	6.75c. to 7.00c.
Soft steel bars, base price .....	3.24c.
Hoops, base price .....	4.49c.
Bands, base price .....	3.99c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base .....	3.34c.
Channels, angles and tees under 3 in. x ¼ in., base .....	3.24c.
Steel plates, ¼ in. and heavier .....	3.34c.

## Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger .....	3.25c.
(Smooth finish, 1 to 2½ x ¼ in. and larger) .....	3.50c.
Toe-calk, ½ x ¾ in. and larger .....	4.20c.
Cold-rolled strip, soft and quarter hard .....	7.00c.
Open-hearth spring steel .....	4.50c. to 7.00c.
Shafting and Screw Stock:	
Rounds .....	4.15c.
Square, flats and hex. ....	4.65c.
Standard tool steel, base price .....	15.00c.
Extra tool steel .....	18.00c.
Special tool steel .....	23.00c.
High-speed steel, 18 per cent tungsten .....	70c.

## Sheets

### Blue Annealed

	Per Lb.
No. 10 .....	3.89c.
No. 12 .....	3.94c.
No. 14 .....	3.99c.
No. 16 .....	4.09c.

### Box Annealed—Black

	Soft Steel C. R., One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20 .....	4.30c. to 4.45c.	.....
Nos. 22 and 24 .....	4.45c. to 4.60c.	5.10c.
No. 26 .....	4.50c. to 4.65c.	5.15c.
No. 28* .....	4.60c. to 4.75c.	5.25c.
No. 30 .....	4.70c. to 4.95c.	.....

### Galvanized

	Per Lb.
No. 14 .....	4.70c. to 4.85c.
No. 16 .....	4.85c. to 5.00c.
Nos. 18 and 20 .....	5.00c. to 5.15c.
Nos. 22 and 24 .....	5.15c. to 5.30c.
No. 26 .....	5.30c. to 5.45c.
No. 28* .....	5.60c. to 5.75c.
No. 30 .....	6.10c. to 6.25c.

\*No. 28 and lighter, 36 in. wide, 20c. higher.

## Welded Pipe

Standard Steel		Wrought Iron	
Black	Galv.	Black	Galv.
½ in. Butt... —41	—24	½ in. Butt... —4	+19
¾ in. Butt... —46	—32	¾ in. Butt... —11	+9
1-3 in. Butt... —48	—34	1-1½ in. Butt... —14	+6
2½-6 in. Lap... —44	—30	2 in. Lap... —5	+14
7-8 in. Lap... —41	—11	2½-6 in. Lap... —9	+9
9-12 in. Lap... —34	—6	7-12 in. Lap... —3	+16

## Bolts and Screws

Machine bolts, cut thread,	50 to 60 and 10 per cent off list
Carriage bolts, cut thread,	40 to 40, 10 and 10 per cent off list
Coach screws, 50 and 10 to 65 per cent off list	
Wood screws, flat head iron,	75, 20 and 10 per cent off list

## Steel Wire

	Per Lb.
Bright, basic .....	4.25c. to 4.50c.
Annealed soft .....	4.50c. to 4.75c.
Galvanized annealed .....	5.15c. to 5.40c.
Coppered basic .....	5.15c. to 5.40c.
Tinned soft Bessemer .....	6.15c. to 6.40c.

\*Regular extras for lighter gage.

## Brass Sheet, Rod, Tube and Wire

### BASE PRICE

High brass sheet .....	17 c. to 18½c.
High brass wire .....	17½c. to 18½c.
Brass rods .....	14½c. to 15½c.
Brass tube, brazed .....	25 c. to 26 c.
Brass tube, seamless .....	21½c. to 22½c.
Copper tube, seamless .....	22½c. to 23½c.

### Copper Sheets

Sheet copper, hot rolled, 20½c. to 20½c. per lb. base.  
Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

### Tin Plates

Bright Tin	Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20	Coke—14 x 20	Prime	Seconds
			80 lb..	\$6.15	\$5.90
			90 lb..	6.30	6.05
			100 lb..	6.45	6.20
	IC..	\$11.25		6.65	6.40
	IX..	12.85		7.85	7.60
	IXX..	14.40		9.00	8.75
	IXXX..	15.75		10.35	10.10
	IXXXX..	17.00		11.35	11.10

### Terne Plates

8 lb. coating, 14 x 20

100 lb. ....	\$7.00 to \$8.00
IC .....	7.25 to 8.25
IX .....	8.25 to 8.75
Fire door stock .....	9.00 to 10.00

### Tin

Straits, pig .....	55c.
Bar .....	60c. to 65c.

### Copper

Lake ingot .....	16 c.
Electrolytic .....	15½c.
Casting .....	14½c.

### Spelter and Sheet Zinc

Western Spelter .....	7½c.
Sheet zinc, No. 9 base, casks .....	10½c. open 11¼c.

### Lead and Solder\*

American pig lead .....	8¾c. to 9¼c.
Bar lead .....	11c. to 12c.
Solder, ½ and ½ guaranteed .....	38 c.
No. 1 solder .....	35 c.
Refined solder .....	29½c.

\*Prices of solder indicated by private brand vary according to composition.

### Babbitt Metal

Best grade, per lb. ....	75c. to 90c.
Commercial grade, per lb. ....	35c. to 50c.
Grade D, per lb. ....	25c. to 35c.

### Antimony

Asiatic .....	11c. to 11½c.
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### Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb. ....	36c.
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### Old Metals

The market continues to advance and demand is good. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible .....	11.50
Copper, heavy wire .....	11.00
Copper, light bottoms .....	9.50
Brass, heavy .....	6.50
Brass, light .....	5.50
Heavy machine composition .....	8.50
No. 1 yellow brass turnings .....	7.00
No. 1 red brass or composition turnings .....	7.75
Lead, heavy .....	6.75
Lead, tea .....	5.25
Zinc .....	3.50
Cast aluminum .....	15.00
Sheet aluminum .....	15.00